Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME VIII.] NEW-YORK, APRIL 16, 1853. [NUMBER 31.

SLOAN'S PATENT HYDROSTAT FOR STEAM BOILERS.

Figure 1.

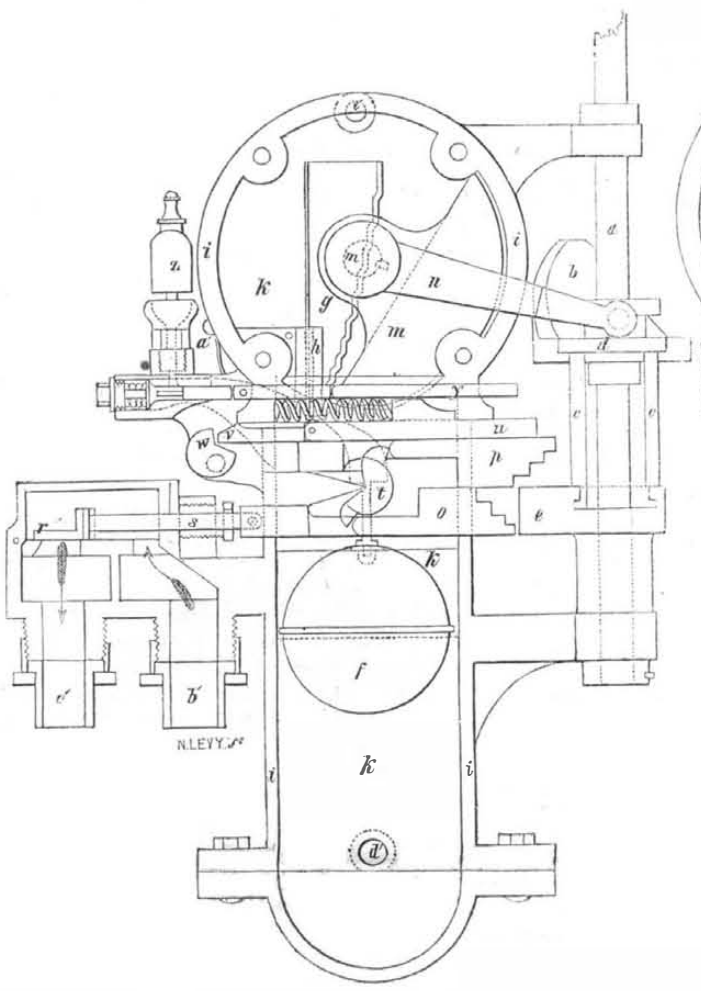


Figure 2.

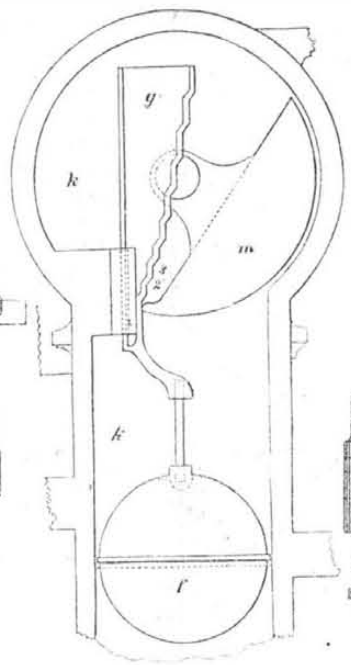
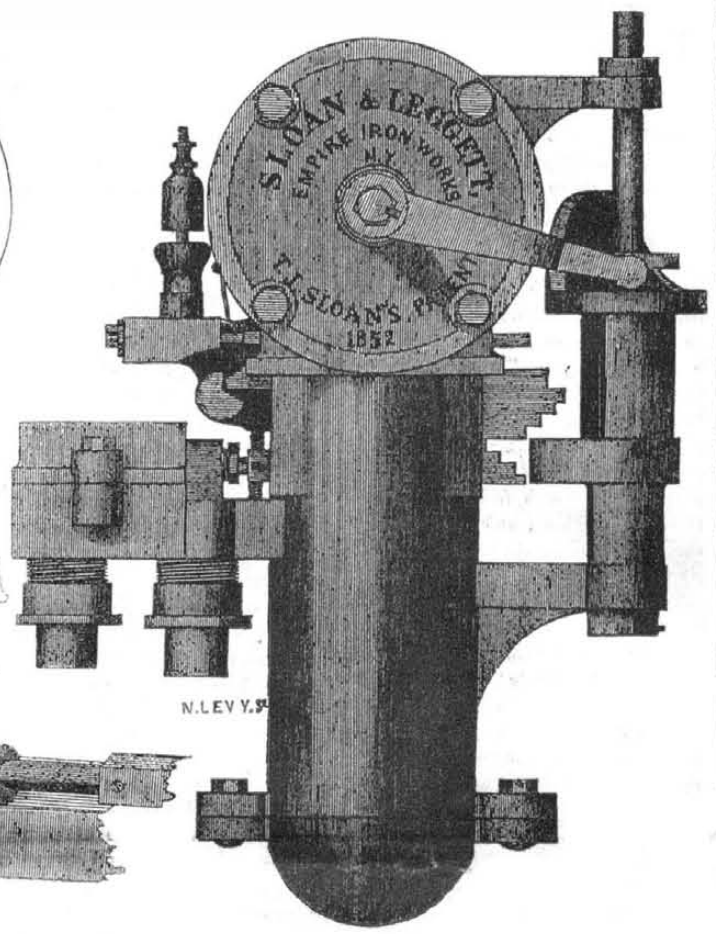
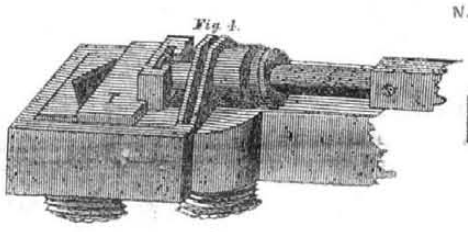


Figure 3.





'The above are engravings of the 'Hydrostat' for the prevention of steam boiler explosions, invented and patented by T. J. Sloan, of this city, N. Y., last year, and noticed by us in our remarks about inventions exhibited at the last Fair of the American Institute.

Figure 1 is a vertical section of the apparatus; figure 2 is a vertical section of the float and notched arm in the hot water chamber; figure 3 is an outside view of the apparatus, and figure 4 is a perspective view of the slide valve with its cover removed. The same letters refer to like parts.

The hydrostat is designed to keep the water in the boiler always at the same level or near the water line, which is done by interposing a regulating valve, between the feed pump and the boiler, the said valve being regulated by a float which indicates the height of water in the boiler, but which is operated by the engine, and thus no mechanical labor is entailed upon the float, to make it work incorrectly, but it is left free and easy of motion by the rise and fall of water in the boiler, so as to make it always indicate the water-line correctly.

The hydrostat illustrated is connected to the boiler by two tubes behind; *a* is a vertical spindle which receives a continual rotary motion from a shaft above, coming from the engine. On this spindle is a revolving cam, which forms an outside collar surrounding a grooved collar and sleeve, *d*, which move up and down every revolution of the spindle in curved slits, *c c*; on the cam collar, *e*, is another cam like, *b*, but is attached to the sleeve of collar, *d*, and not to spindle, *a*; *f* is a copper float to which is attached a composition metal arm or indicator, *g*, having a flange on either side, serving as a guide in its passage loosely through the slotted rest, *h*, fastened on the inside of the case, *i i i i*, which forms the steam chamber and water reservoir, *k k k*, with its water and steam connections, *d'* and *e'*. The dotted line across the float, *f*, shows the water-level, with the float resting on the surface, holding the indicator, *g*, with the lowest grade or step opposite the edge of the weight, *m*, figs. 1 and 2. A shaft, forming part of the weight, *m*, passes through a stuffing-box in the outside of the front plate enclosing the steam chamber, *k*; keyed firmly to this shaft is an arm or lever, *n*, with a pin in the other end resting on the cam, *b*, and entering the groove of the collar, *d*; when the shaft, *a* revolves, the cam, *b*, coming in contact with the pin raises it to the highest point of the cam, *b*, thereby, also, lifting the grooved collar, *d*, which carries the slides, *c c*, and the cam, *e*, also relieving the indicator, *g*, from the pressure of the weight, *m*, allowing it to assume the positions which the float determines by resting on the water; the cam, *b*, still moving, allows the arm, *n*, and grooved collar, *d*, to fall gently, until the edge of the weight, *m*, again touches one of the steps of the indicator, thus making the position of the cam, *e*, dependent upon the elevation or depression of the float. The notched slides, *o*, and *p*, are fitted so as to play freely in a chamber cast through the instrument, so that the slides, *o* and *p*, do not come in contact with the steam; these slides are so connected with the supply valve, *r*, controlling the connection between the two parts of the feed-pipe *b'* and *c'*, that when, *p*, is pushed in by the cam, *e*, the valve is opened, and when, *o*, is pushed in, the valve is closed, and the slides are so attached by the piece, *t*, on a wedge centre, that one slide comes out in proportion as the other is pushed in, and vice versa. The water in the engraving is represented as high; we will suppose it commences to fall; at each succeeding revolution of the shaft, *a*, the weight, *m*, will rest on a higher notch or step of the indicator, *g*, causing the cam, *e*, to rise accordingly, which will successively press in the slide, *p*, until the supply-valve, *r*, is wide open, when, if the water still continues to fall, the cam, *e*, is raised still higher, and, in its revolutions will press in the slide, *u*, which, by means of the fall, *v*, and hub, *w*, causes the hammer, *a'*, to strike the bell on the back part of the instrument, thereby giving the first alarm to the engineer that the pumps are not feeding or the water is shut off; and if he cannot remedy the difficulty, and the water continues falling, the cam, *e*, is elevated still further, so that it presses in the stem, *y*, which opens the puppet-valve and admits the steam to the whistle *z*, which sounds the general alarm, notifying the engineer and others that the water in the boilers is getting too low for safety. If the supply begins to be restored again, the float rises, and the parts assume their original position.

The feed water to the boiler must pass through the instrument coming in by pipe, *b'*, and out to the boiler by pipe, *c'* when the valve, *r*, is open, and the notched slides, *o p*, operate one another, so that when one is pushed in the other is thrust out; it is thus that the valve, *r*, is self acting. This instrument being continually in motion, it cannot become useless from neglect. Should the stuffing-box at *m*, be too tightly packed, or it from any cause the parts do not work freely, the arm lever, *n*, will remain at the top of its stroke, holding up the sleeve and collar, *d*, by which the cam, *e*, will be made to strike the slide, *u*, as the said cam revolves, and thus strike the pin, *v*, and give the alarm spoken of. The arm, lever, *n*, is operated in the same way, by dropping down as the water falls low as indicated by the sinking of the float, *f*. The notches, 2 3, as shown in figure 2, of the indicator, *g*, are so represented that the action of the weight, *m*, on the said indicator is clearly seen, so as to show how the arm, *n* figure 1, works the collar, *d*, and cam, *e*, which operates the slides of the valve, and likewise the bell and whistle pins.

This beautiful, useful, and ingenious apparatus is manufactured by Messrs. Sloan & Leggett, the proprietors and manufacturers, at the Empire Iron Works, 100t of East 25th street, this city.

In our opinion, it tends greatly to the safety of every steam boiler on which it is placed, and is the most unique instrument as a boiler gauge, regulator of feed water and alarm, that has yet been invented.

Aerial Navigation again.

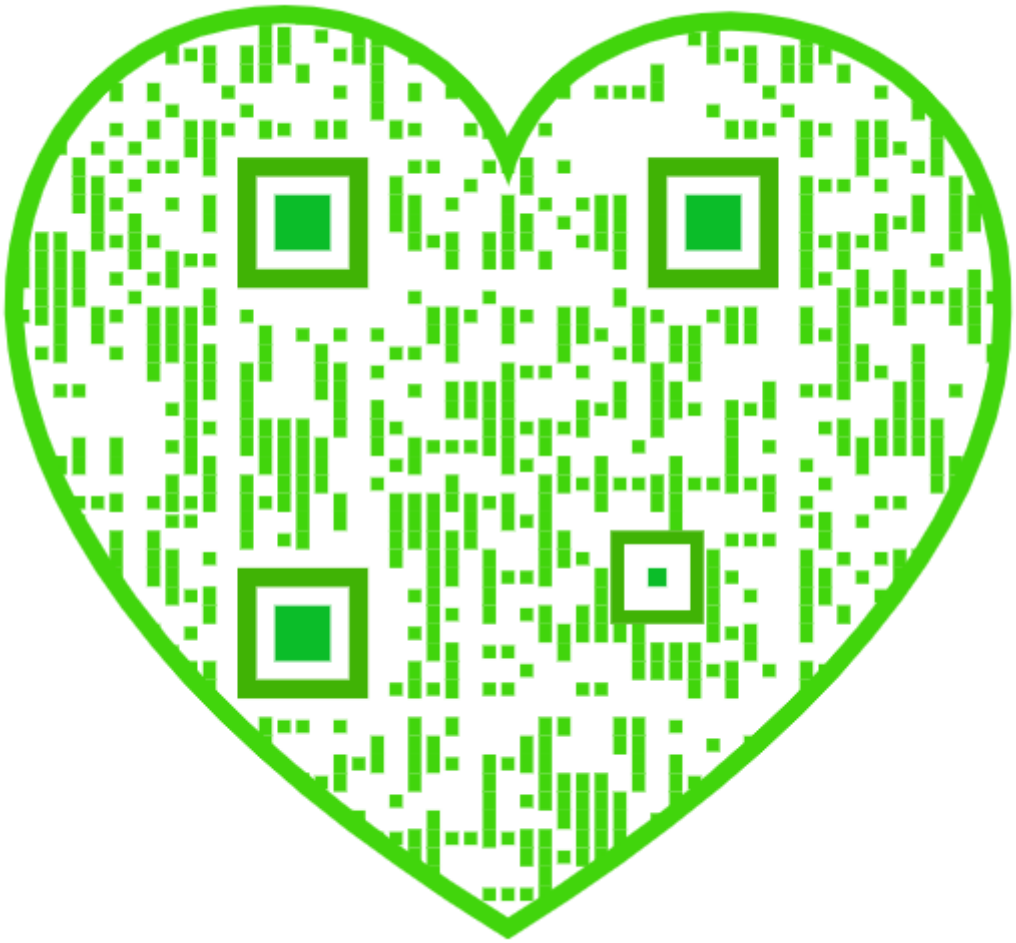
By the Washington papers we learn that Prof. Porter has been astonishing the dwellers in that goodly city with his wonderful Aeroport, 20 feet long, and filled with hydrogen gas—the lightest of all the known elements of matter.

"The float was filled with hydrogen gas; from it was suspended a saloon, containing a steam engine to move the screw propellers, which operate between the float and the saloon. The Aeroport moved gracefully around the room to the great delight of the spectators. So far as this experiment is concerned it was successful."

We are not informed of the size of the steam engine; it was no doubt as big as a piece of chalk, therefore, according to the small amount of evidence, which is required by so many paragraphists, we have now a demonstrated fact of aerial steam navigation being perfectly successful. We have no such hope, because we have no faith in this project,—some new discovery must be made before that can be accomplished. Prof. P., however, is a wonderful wizard in conjuring up new inventions to contend for victory with the "Prince of the Power of the Air."

A Boston firm has just cut 5,000 tons of ice on Winnipissiogee Lake. Its cost will be $2 per ton at Long Wharf, the firm will get at least $25,000.

© 1853 SCIENTIFIC AMERICAN, INC



MISCELLANEOUS.

New Clock for our City Hall.

A new and beautiful Turret Clock, has been built for the Hall Tower of this city, by Messrs. Sherry & Byram, of Sag Harbor, L. I., and it is now in the course of being placed in its proper position. It was something much wanted, viz., a first-rate clock of American manufacture—one that will keep time equal, if not superior, to any in the world, and this we believe will be done by this new clock.

The frame of the clock is composed of iron and composition metal, the length of which is four feet, the width two feet, and the height two and a half feet, or, including the bed, plate, and pedestal, the whole height is four and a half feet. The weight of the whole is about 1,000 lbs., 300 lbs. of which are iron and steel, the remainder brass and composition. The works are so constructed that any wheel may be removed without disturbing the next. The large or main wheels are twenty inches in diameter and weigh 60 lbs. each; the other wheels are all in proper proportion, and of the purest brass hardened in its composition. The barrels are also of brass, ten inches in diameter, and of length sufficient to receive sixteen turns of the cord, which gives the clock eight days of running time. The arbors are of cast-steel; the pivots hardened to the highest degree of temper, and run in bosses of a compound metal, which, from its nature is almost free from friction; and from several years' use, is found to be almost perfectly unaffected by wear.

To the barrel of the time train is attached a retaining power, similar to that used in lever watches and chronometers, which keeps the clock going while the action of the weight is taken off in winding. The wheels and pinions are all cut in aliquot numbers, so that any wearing that may occur in the gearing will only serve to continually diminish the friction; and so smooth and perfect are their operations, that, although the time train weighs near 200 lbs., it is now running with a power of only about sixty lbs. weight. The escapement is of the old well-tried dead-beat form; the escape wheel is 6½ inches in diameter, and although its acting part is near one inch upon the pallets, yet, from the neatness of its construction, its weight is only ten ounces, and turns on its pivots in two splendid jewels. The pallets are of the finest agate, one inch in length and breadth, set in sockets of steel, and exhibit a very refined skill in mechanical manipulation.

The pendulum rod is of a peculiar kind of wood, 168 inches in length, and swings once every two seconds; and has a brass lenticular weight of 120 lbs., with a compound regulator and compensating fixture, so arranged that while it is utterly unaffected by the most extreme changes of temperature, the performance of the clock may be corrected with the most minute certainty to almost perfect measurement of time.

The spring by which the pendulum is suspended is near two inches in width, but its thickness is only 5-1000ths of an inch. The pendulum is not attached to the frame of the clock as is usually done, but is suspended to a strong iron support secured to a standard braced with great strength, thus preventing any possibility of the rocking of the frame that would occur from its vibrations with so heavy a body attached. An application has been made for a patent, through our Agency, for this beautiful pendulum.

A powerful winding gear is affixed to each barrel, and the parts so constructed that the pinion is shifted from one barrel to the other, and disengaged when the weights are wound up.

In speaking of church clocks, a correspondent of one of our monthly cotemporaries justly speaks of the very inefficient church clocks scattered throughout our country. In fine clocks, he says, "we Americans, with all our boasted skill and ingenuity, are very far behind some other nations." He also proposes a new device, named a remontoir escapement, recently invented by a Mr. Dent, of London, which he thinks will make all our church clocks go as correctly as chronometers. There is just as much mechanical skill in our country as in any other, and we have no donbt but this new clock of Messrs. Sherry & Byram's is equal to any in Europe. The churches throughout our country can be furnished with clocks that will keep time, if they choose to save money by paying for good workmanship instead of losing it by buying cheap clocks, "to deceive time and all the parish." Better have no clock in a church or steeple, than a poor one.

The Caloric Engine in Russia.

We understand that since Captain Ericsson's Caloric Engine was first brought before the public, enquiries with respect to it have repeatedly been made by the Russian Government. It has accordingly been supposed that Russia would be one of the first countries to adopt the new invention. A great deal of attention has certainly been paid to the subject in Russia, and great interest is taken in it. But it seems that Capt. Ericsson has a rival there who threatens to carry off the patronage of the Government. The "Northern Bee," a German paper published in Prussia, states that on Feb. 22, a Mr. Nobel exhibited an improvement on Ericsson's machine, which was kept in motion for some time to the great satisfaction of all the spectators, among whom was the Grand Duke Constantine. The improvement consists in putting the cylinders inside of each other, whereas Ericsson puts the supply cylinders on top of the working cylinders About the arrangement of the machine and the results produced, the "Northern Bee" communicates nothing further.

[The above is from an exchange; we think the improvement on the "Ericsson," which the "Northern Bee" speaks of, is one of the most peculiar and wonderful ever contrived. An Ericsson engine has four cylinders—two hot air and two cold air, and these the Russian puts *inside of one another*. Well, wonders will never cease.

On Sugar.

The following description of this essential article of food, the use of which is now universal, and which forms so important an ingredient in the economy of vegetable nature, is extracted from a new work by Dr. Pierce, lately published, and which will be found noticed in our review of new publications:—

"The physical properties of sugar are so well known, that it is unnecessary to describe them. Sugar is very soluble in water and diluted spirits, is almost insoluble in absolute alcohol, and is entirely insoluble in ether.

In our market only two sorts of sugar are met with, the cane and the maple sugar, while in different parts of Europe two other sorts occur, the beet and grape or starch-sugar.—Another variety, sugar of milk, is sometimes prepared for pharmaceutical purposes. But this article has little in common with the other sugars, except the name, and a sweetish taste. The cane, beet, and maple sugars have about the same sweetening power; the grape-sugar has much less, and the sugar of milk less than grape-sugar.

The principal impurities to be sought for in cane-sugar are inorganic matter, water, molasses, farina, and grape or starch-sugar. The latter substance, though extensively added in Europe to cane-sugar, is not, I think, much, if at all, used for adulterating in this country. It may be detected by the action of concentrated sulphuric acid and of a solution of caustic potassa; the former blackens cane-sugar, but does not affect the starch-sugar, while potassa darkens the color of starch-sugar, but does not alter that of cane-sugar. But the Copper Test is far more delicate. Add to the solution to be tested, a few drops of a solution of blue vitriol, and then a quantity of potassa solution, and apply heat; if the cane-sugar is pure, the liquor will remain blue, while, if it be adulterated with starch-sugar, it will assume a reddish-yellow color. Sugar of milk acts with the copper test in the same way as starch sugar.

Inorganic matter is determined by incineration, farina by the Iodine Test, water by drying at 212°, and molasses by getting rid of it by recrystallization from alcohol, as also by the color and moisture of the article.

The natural impurities of sugar are gum and tannin; gum is detected by giving a white precipitate with diacetate of lead, and tannin by giving a black coloration or precipitate with persulphate of iron.

An experienced sugar dealer easily judges of the value of sugar by the taste, smell, specific gravity, moisture, and general appearance.

The value of molasses may be determined by drying at 220°, and by the taste.

A Correct Account of the Explosion of the Blast Pipe.

On another page we have published two short letters, both agreeing as to the cause of the explosion of the Blast Pipe at the Lehigh Crane Iron Works. The annexed letter is from one on the spot, who gives an account of the explosion and the cause, which nearly agrees with the opinions expressed in the two letters on the page spoken of.

MESSRS. EDITORS—The cause of the accident at the Lehigh Crane Iron Works, was on account of leaving a valve open between the tuyeres and the blast pipe, when the engine and furnace had been stopped about 30 or 40 minutes. The iron was run out a little after 8 o'clock, and the accident took place at 9. Gas returned through the valve, was ignited, and exploded. The only safe way to prevent the occurrence of such an accident is to have a pressure of air always against the valve, and to have the valve near the tuyeres. The accident interrupted the works for three weeks; it was serious, but nothing like what was represented. About 220 tons of iron are made per week. The furnace is near 60 feet high, with an 18 feet bosh. The smallest movement of the bellows will keep back the gas, but when the engine is stopped it is necessary that all communication with the pipe and fires should be closed tight. *. *.

Miscellaneous Items.

Responsible parties in England, have petitioned Parliament for a charter to work some recently discovered gold mines in one of the Townships of Canada East. It is also reported that gold has been discovered in Jamaica, W. I.

Seven hundred tons of ice were recently shipped to Cincinnati, from Sandusky, costing on delivery, about $8 per ton, but owing to the great scarcity of the article in that locality, it readily sells for $30 per ton.

White pine lumber is being shipped from this part for Australia.

Guano has been discovered in the Gallapagos Islands.

A free-stone of a light bluish gray color has been found in the Cheat River District, Va., and used successfully for building purposes.—It was unknown until laid open by the building of the Baltimore and Ohio Railroad, which has brought into use this source of internal wealth. The quarries are situated immediately on the route of the railroad, and cars can thus be laden with the greatest facility and economy.

About 100 tons of castings for the India Rubber Works, about to be established in France by Hiram Hutchinson, late President of the Newark India Rubber Manufacturing Co., are now in progress of manufacture at Trenton, N. J.

A curious circumstance is mentioned in connection with the burning of the Oil Works at New Bedford, Mass.: a large quantity of spermaceti in bags, placed between iron plates, for the purpose of pressing, burnt completely, leaving the bags themselves almost entire. This is most singular as the plates must have been subjected to a red heat.

Prince Albert is among the contributors of works of art to the Industrial Exhibition. The portraits of her Majesty, himself, Prince Arthur, and of the late Duke of Wellington, forming the picture painted by Winterhalter, is his contribution. The Baron Marochetti has completed a colossal equestrian statue of Gen. Washington, which is about to be embarked for the Exhibition.

The King of Sweden, in consideration of the great scientific practical value of Lieut. Maury's labors, has ordered that the Swedish navy co-operate with this officer, by making observations according to the form prescribed for his "Wind and Current" chart.

Electricity, Curious and Beautiful Experiments.

Electricity, as widely as it is diffused, and powerful and active as its agency is in all the operations of nature, is yet scarcely any better known in its causes and effects than it was six thousand years ago. Modern science has penetrated a step or two into the arcanum of its mystery, and the revelations have been as astonishing as they are beautiful. When Morse harnessed the lightning, and made it travel with the speed of light, as a common courier, a great and important first step was taken in the task of reducing this wonderful agent to man's purposes, and making it a useful servant to his wants. Much yet remains to be discovered, but the investigating mind sees in many of the manifestations of electricity, to what a variety of practical and useful purposes it may yet be applied. One of the most beautiful and curious experiments performed through its instrumentrlity which we have seen, is that of lighting gas with the tip of the finger. This experiment may be easily performed, and has been done by James Swaim, of this city, repeatedly, in connection with the beltings of the engine and shafting of the press room, and it is far more astonishing than the spirit rappings, which are setting so many people crazy. Friction, it is well known, will produce electricity in certain substances, and the friction of a gutta percha or common leather working belt upon the fly-wheel or pulleys of a steam engine and shaftings produces it in considerable quantities.—If a person will insulate himself by standing upon a board fixed upon glass insulators—common porter bottles would answer—and hold an iron bar or a number of iron spikes in his hand, their points almost touching the belt, he may, by extending the opposite hand to a gas-burner, light it with the tip of his finger as easily as with a match. He will feel a sensible shock pass through him, a pricking sensation in his finger joints, and see a brilliant spark pass off with a cracking sound to the gas-burner. The electric fluid will pass through several persons joining hands, the same as with an electric battery, and the last may fire the burner.—[Philadelphia Ledger.

Saw-Dust as Litter.

The above material has been successfully introduced as litter for horses in Ohio, instead of straw, and may be profitably employed for this purpose when the latter article is dear. The "Ohio Cultivator" contains the following remarks upon the subject: "Several bushels of dry saw-dust are thrown into the stall, upon which the horse stands during the night. In the morning it will be found that about a bushel has to be removed—one-half of which is manure and one-half saw-dust, so well saturated as to contain a large portion of ammonia, performing the double office of absorbent and purifier; thus the air of the stable is kept pure, and the ammonia saved for the compost heap. This compost Mr. Blake has applied to his stiff clay land, and reports that it operates like yeast, making the ground very light and mellow. In the morning, that portion of the bedding which remains dry, is shoved up under the manger, to serve for another night.

Another advantage from this material for bedding is that a horse which lies upon it is much easier cleaned off than one which lies on straw; the saw-dust entering among the hair brings away the secretions, when the curry comb and brush are applied, leaving a bright lively coat. In warm weather it has another great advantage, that of being much cooler than straw, so that a tired and heated horse can sleep pleasantly, without incitements to feverish restlessness. The establishment of steam mills in all parts of the country, renders the material easy of access to almost every neighborhood, and we doubt not when its virtues are better known, it will be generally applied to stable use, as a means of comfort to the horse, and also of turning an otherwise useless article into profitable account."

A diamond of beautiful form and the first water, accompanied by a fine sapphire, has been found in Australia.

Mr. Avery, whose improvement in joining stones was noticed last week, resides in Norwich, Conn., and not Stonington, as erroneously mentioned.

© 1853 SCIENTIFIC AMERICAN, INC

Explosion of a Blast Pipe.

MESSRS. EDITORS—You inquire, in a late number of the "Scientific American," "what was the cause of the bursting of the blast pipe of the Crane Iron Works, Pa.?" I will endeavor to answer. I am not aware of the circumstances of the explosion, but I believe you will find the cause as I shall describe it. If I am correct, the explosion was not caused by the blast, nor while the blast was in operation, but in putting on the blast, just as a boiler explodes when putting on the pumps. The cause of the explosion was gas from the furnace, the pipe having become filled with it while the blast was off. When the blast is put on, the gas is forced back into the furnace or rather explodes on the first turn of the current to the furnace instead of from it, as it was before the blast was applied.

You will observe that the draught, as I have stated, is, in the first place, from the furnace, sometimes caused by the wind blowing down the chimney; sometimes I have noticed quite a strong natural draught into the pipe. The tuyeres are placed low, near the bottom of the furnace, a reason why the gases have not been more consumed when entering the pipe. Furnaces ought all to have an opening of about two or three inches in diameter, and at the end of the bend, where the pipes ascend or descend from the tuyeres, with a slide or cover, which should always be open when the blast is not on the furnace, this causes a draft into the furnace, and prevents any from it.

As we are on explosions, I ask the scientific world,—"did you ever see our foundrymen pouring melted iron into a pailful of water to warm it in winter, often causing a steam explosion on a small scale; here is a pail of water without any power, into which you can pour melted iron to a certain extent in perfect safety, but the instant this is exceeded the pail is dashed into a hundred pieces without any warning whatever; where is the utility of safety valves, false alarms, &c., for this kind of explosion, when the top of an open pail won't do? pour your water from engine pumps on red-hot iron, and the same result ensues. I have often seen men scalded more or less in this way; a little experience, however, soon teaches a man how far to go with safety.

Troy, N. Y., 1853. J. T.

[The following is another letter on the same subject:—

"The blast-pipe which exploded, as mentioned in the "Scientific American," must have been charged (by stopping the blast) with di-carburet of hydrogen, formed by the distillation of coal in the furnace. It being nearly one half as light as air, would find its way into the pipe, and as it ($C.H^2$) requires only about two volumes of oxygen, or a little more to render it highly explosive, when they started the blast it passed off like thunder.

Salem, Mass., April, 1853. E. L. N."

The Ray Premiums—A Shameful Act.

MESSRS. EDITORS—I see by the Scientific American that the judges of the "Ray Premiums" have at last made their report,—and what is it? Why, they have awarded a premium for a brake that was patented November 25, 1851—six weeks before the premium money was offered, and more than two months before it was advertized in your paper. The advertisement reads thus:—"The premiums will be open for competition from this date [Jan. 1, 1852] until the next Annual Fair of the American Institute, when they are expected to be on exhibition; and no invention already introduced to the public will be entitled to compete for the prizes."

Regardless of these specific terms, they have given a premium to an invention which had been patented at least six weeks before Mr. Ray made his offer with the above stipulations.

Now this Mr. F. A. Stevens, of Burlington, Vt., is no more entitled to a premium, if the advertisement means any thing, than the man who first made a railroad brake. I think the whole business has been conducted, from beginning to end, in a very unfair and ungentlemanly manner. And as one of the competitors, I do most decidedly object to the award being given as it has been, not because he had not the best brake, but because he was not a lawful competitor. T. S. I.

[The conduct of the American Institute has been very blameable in this matter, and that of Mr. Ray none the less so. He made the conditions, the committee were only appointed to carry them out.

These conditions have been set aside. Was this act done by the authority of the maker of these conditions; if not, he should not pay over the money. The whole business has been a disgrace to all those concerned in offering and deciding on the prizes. Let the competitors meet in this city, this summer or fall, and express *their* opinions respecting the conduct of the "Institute."

Railway Tunnels.

Much interesting knowledge in this caption was lately given by James Hayward, engineer, on the examination before the Massachusetts Committee respecting the Hoosac Tunnel. He has visited Europe, and examined as many as thirty tunnels. During his visit he made the acquaintance of several eminent engineers and supplied himself with profiles of several tunnels. The Marseilles tunnel, located at Nerthe, near Marseilles, is three miles (15,153 feet) long, and has twenty-four shafts. The material in this tunnel is a very hard limestone. The height of the ground over it is a little over 600 feet. The aggregate length of all the shafts is 7,589 feet; the deepest shaft is 610 feet. The cost per yard down is $43. The shafts are nine feet in diameter, and are lined with masonry, at a cost of $19·40 per yard down.

Mr. Hayward obtained from the engineer in charge of the work, the prices which the work cost. The deepest shaft cost $73 per yard down, entirely completed. The entire cost of all the shafts, for the masonry, amounted to $47,000; and $150,000 for the whole cost of the tunnel. The entire cost of the tunnel to the contractor was $125 for the lineal yard; this includes shafts. The tunnel was lined with masonry of different thicknesses, which cost $423,000. The cost of the tunnel, exclusive of the masonry was $705,000. The contractor, however, gave Mr. Hayward a less price, about 4 per cent., as having been the actual cost.

The Woodhood Tunnel between Manchester and Sheffield is a little over three miles long, and the hill over is 600 feet high. It has five shafts, 10 feet in diameter, which vary from 400 to 600 feet in depth. The character of the rock is granitic, not so hard as our granite; it is called there "mill stone rock." The tunnel was about five years in construction, and its whole cost was $1,026,705.

The Box tunnel is one of the earliest as also the largest and most expensive tunnel ever constructed, it is 39 feet high and over 30 feet wide. The tunnel is on the Great Western Railway, about 100 miles from London. The shafts were 25 feet in diameter, its length is 9,576 feet. Over some third of it is through the solid rock.

In England there are on the canals some forty miles of tunnels—the one on the Huddersfield canal being over three miles in length, and through a substance much more flinty than the Hoosac Mountain. A tunnel is being constructed under Mount Cenis, in the Alps, which, when finished, will be about seven miles in length; and another of equal distance under the Appenines, on the route of the railway from Turin to Geneva. There are numerous tunnels on the Baltimore and Ohio Railroad, and the branch road to Parkersburg. The highest cost of excavating the tunnels on the Baltimore and Ohio Railroad, which penetrates mica rock, was three dollars eighty-seven cents per yard, and at this rate it will cost over one million three hundred thousand dollars to perforate the Hoosac Mountain.

The proposed tunnel will be about four miles and a half in length, and the number of cubic yards of stone to be removed some 450,000.

Yellow Shower.

After a shower of rain which extended over several of the Western States, on Friday the 25th ult., a substance resembling sulphur was observed in various localities, especially in the neighborhood of Louisville. The Courier of that city says: "On Saturday morning the streets and all the pools of water for miles around were discovered to be covered with a fine yellowish dust, which many have supposed to be sulphur; in fact, we are informed that some of the dust was gathered, and upon fire being applied it burned the same as sulphur. We, however, are not inclined to any such opinion, but believe the substance to have been no other than the pollen of plants or trees and scattered by the winds.—Its appearance on the waters is a thing of common occurrence at this season, particularly in those parts of the State of Louisiana and Mississippi where the pine and cypress abounds." The Cincinnati papers also notice the phenomenon as it was observed in that city.—[Exchange.

[It was doubtless the pollen of plants and trees blown across the continent, which is of common occurrence in the southern part of the Union at this period of the year.

[For the Scientific American.]

Anthracite Coal Locomotives.

The Mulholland locomotive has been so improved that now a full train of passenger cars is regularly run from Philadelphia to Pottsville, 94 miles, with two tons of Schuylkill coal, working up to fast time, viz., four hours, including 18 stoppages.

The superior adaptation of hard coal to road engines is now conclusively established to the satisfaction of this railway company. The Norris factory is now constructing five Mulholland locomotives for the Camden railroad, and the Reading Railroad Co. is adding to this large number now in use as fast as it can get them built; intending, in two years, to have no others in use. They find them superior to wood engines in power and steadiness, for heavy freight. at ten miles per hour, and manifold cheaper, of course. And after an experience of nearly two years, they are enabled to assure us that they are entirely free from the unusual burning out of the fire-box, formerly thought incurable. Copper boilers also, which were supposed alone capable of resisting the destructive heat of anthracite, are dispensed with, common iron being found to answer fully in the Mulholland locomotive. J. *. *.

Philadelphia, 1853.

Navy of the United States.

According to the "Navy Register" for the current year, the following is the naval force of the United States:—

Eleven ships of the line, carrying eight hundred and sixty guns. Of these, three are in ordinary, four on the stocks, and one preparing for sea. The Independence, a razee, carrying fifty-four guns, is also preparing for sea.

Twelve frigates of the first and one of the second class, carrying five hundred and sixty-four guns. Of these five are in commission, four in ordinary, two on the stocks, and two preparing for sea.

Twenty-one sloops of war, carrying four hundred and two guns. Of these, fifteen are in commission, one in ordinary, and one preparing for sea.

Four brigs, carrying forty guns. Of these, three are in commission, and one of them is preparing for sea. Also, four schooners, carrying seven guns, two of which are in commission, one in ordinary, and one preparing for sea.

Five steam-frigates, carrying forty guns, all in commission; four steamers of the first class, carrying eighteen guns, two of which are in commission, one repairing, and one preparing for sea; and seven steamers less than first class, carrying five guns, three of which are in commission, two preparing for sea, and two employed as tenders.

Five store ships, carrying twenty-four guns; three of them are in commission, and one preparing for sea.

This gives a total of seventy-five vessels of all kinds, carrying two thousand and fourteen guns.

Weaving of Brocatelles.

It is said that a factory at Humphreysville, Conn., is the only one in the world where silk brocatelles are woven by power looms. At all other places where they are made, the weaving is done by hand, and, previous to the successful operation of this establishment, it was deemed impossible to construct machinery ingenious enough to weave in silk the complicated patterns of the brocatelles. The use of machinery is the only thing which enables American makers to compete with the German and French manufacturers in this branch of industry, as the foreign establishments have greatly the advantage in the cheapness of labor. The artist employed in this factory to execute designs and draw new patterns, is one of the best order, and was educated at Napoleon's celebrated school of design at Lyons.

The Aurora Borealis and the Electric Telegraph.

On the House, Morse, and other Magnetic Telegraphs, the effect produced by the aurora is generally to increase or diminish the electric current used in working the wires; sometimes it neutralizes it, so that in effect no fluid is discoverable on them. The Bain, or Chemical Telegraph is, however, much the best adapted for observing the precise effect produced by the Aurora. In this system, the main, or line wire, is brought into direct contact with the chemically prepared paper, which lies on a metal disc, connected with the ground; any action of the atmospheric current is therefore immediately recorded on paper.

During a thunder-storm, the atmospheric electricity attracted by the wires passes over them to the ground, and as it passes from the wire to the paper it emits a bright spark, and produces a sound like the snapping of a pistol. Atmospheric electricity never remains for any length of time on the wires; it will, however, sometimes travel many miles before discharging itself, sometimes as much as forty or fifty miles. The effect produced by the aurora borealis on the wires, and the record on paper, is entirely different from that of the atmospheric current. Instead of discharging itself from the wires with a flash and report, and without the aid of a conductor, as is the case with the latter, it glides along the wires in a continuous stream, producing the same result on paper as that produced by the galvanic battery. It is well known that only the positive pole of the battery produces the colored mark on the paper,—the negative having the contrary effect of bleaching it; the same is also true of the two currents from the aurora. The current usually commences lightly, producing a blue line just perceptible on the paper, and gradually increasing in strength, making a dark blue, and then a black line, till finally it becomes so strong as to burn through several thicknesses of it, until it gradually disappears, and is followed by the bleaching process, which entirely neutralizes the current from the batteries.

The aurora borealis seems to be composed of a vast mass of electric matter, resembling in every respect that generated by the electro-galvanic battery; the currents from it change, coming on the wires, and then disappearing—as the mass of the aurora rolls from the horizon to the zenith—sometimes so faintly as to be scarcely perceptible, and then so strongly as to emit one continuous blaze of fire—yet very different from what is termed atmospheric electricity, placing ground wire conductors in close proximity to the line wires being of no avail in this instance.

Invention of Chess.

A Mr. Basterot, of France, has recently edited a work upon the game of chess; and among other particulars, he informs his readers, upon good authority, that this game was invented during the sixth century, by an Indian Brahmin, called Sisla, who presented his invention to the reigning monarch, Sirham, requesting as a reward, one grain of wheat for the first square, two grains for the second, and four for the third, and so on, in geometric progression, up to the sixty-fourth; to reach the amount of this humble request, the author informs us, would require the entire wheat crop of France during 140 years!

[Instead of 140 years, it would take over 360,000 years for the purpose, allowing the annual wheat crop of France to be 100,000,000 bushels.

A design for a prize medal is wanted in New York by the Directors of the Association of the Industry of all Nations. They offer $200 for it.

© 1853 SCIENTIFIC AMERICAN, INC

NEW INVENTIONS.

Improvement in Spinning.

Edmund Victory, of Watertown, N. Y., has taken measures to secure a patent for the above. The improvement consists in the employment of a revolving tubular head, which is furnished with a pair of drawing rollers, whose axes are perpendicular to its axis, and which can be used either in a separate machine or in combination with the bobbin, and fly frame or cop spinner with live spindles. The object proposed is to be able to both draw and twist the sliver or roving, at the same time. This is effected by a combination of geared wheels, which so connect the revolving head with the drawing rollers that the sliver or roving while being drawn off the spool by another set of rollers intended for that purpose, and which revolve at a less speed than the head and drawing rollers is stretched or drawn out by these last, and at the same time twisted. The thread is then conducted by another set of rollers to the flier, by which the final twist is given and it is wound on the bobbin. Any number of heads and drawing rollers may be employed in the same frame, but when used in combination with the bobbin, and flyers or live spindles, the heads must correspond in number with them.

Self-Adjusting Hatch.

Hatches, as at present arranged, are extremely dangerous, they are almost invariably placed at the entrance of the stairways of buildings, and the upper doors are, in consequence, adjacent to the upper stairways, so that if the doors are left open, which is generally the case, through carelessness, inattention, or other causes, accidents often of a serious nature are likely to occur. Such casualties are rendered entirely impossible by an improvement, the invention of Daniel Tallcot, of New York City, who has taken measures to secure a patent. The improvement consists in attaching to the axis or pivots of each door of the hatch a half pulley, to which a lever is connected by a chain or rope, the lever being constructed in such a manner that the carriage, in its descent, will operate upon the lever and open the doors, thus allowing the carriage to pass through, the doors afterwards closing by their own weight, the effect of which is graduated by springs. In like manner the carriage is elevated by means of a pulley hung on a cross-piece at the top of the uprights between which it travels, and which are grooved for this purpose, serving as guides, and as it ascends, of course raises the doors. There are other springs secured to the inner side of one of the uprights, which are intended to throw the doors out of their vertical position when the carriage has passed through, and thus facilitate their closing.

Improved Lard Lamp.

The great objection to the employment of the above-named lamps is the difficulty that is experienced in lighting the wick from the cooling of the lard, and consequently hardening around the wick. To remedy this inconvenience, an improvement has been invented by Isaac H. Bartholomew, of Northford, Ct., who has taken measures to secure a patent. The inventor uses an additional oil lamp, and a copper or other metallic tube, which is suspended over this last-named lamp, and furnished with reflectors, by which the lard round the wick of the other lamp is melted and also the lard in the body of the lamp. Both apparatus being only used until the purpose is effected, when the oil lamp is extinguished and the heat conductor removed.

Self-Acting Switch.

The ordinary switches require an attendant to operate them, and are therefore exceptionable in many points of view, they are costly, and are liable to dreadful accidents if by any cause they are neglected to be turned in a proper direction for passing trains. To remedy these disadvantages an improved switch, which is self-acting, has been invented by Theodore Sharp, of Chatham-4-corners, N. Y., who has taken measures to secure a patent. By this contrivance the passing trains are made to operate the switches by bearing in their course upon levers which are placed vertically on pins secured on the outer side of the rails, and are forced down horizontally as the wheels pass over them, drawing the rails to the required direction for the cars. To effect this object, the pendulous levers just mentioned are connected by a cross-piece, and longitudinal bars that are part of their length made flexible to the switches, which, when in a right position for the passage of the train, are secured by a catch on one side. There is likewise a contrivance for unlocking the switches when it is required to reverse them by means of bent rods and rock shafts, and the entire apparatus is kept from injury in a case of any suitable form, as may be required.

TERRY'S CAST-IRON PAVEMENT---Fig. 1.

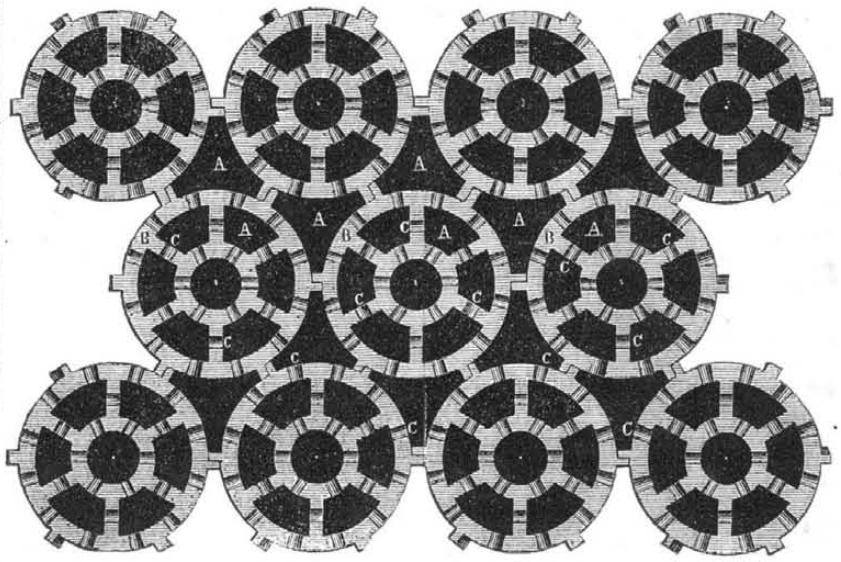
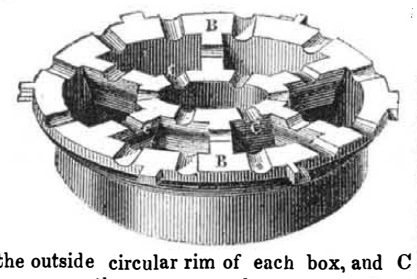


Figure 1 is a plan view of a section of Terry's cast-iron pavement, and fig. 2 a perspective view of a block of it. It is the invention of W. D. Terry, of Boston.

The nature of the invention consists in covering the surface of a street with boxes made of iron of any convenient form and size, and divided into sections, so small as not to admit the hoof of a horse, and the compartments of iron are so arranged as to strengthen one another, and the whole pavement. The boxes are grooved in such a manner as will effectually prevent the feet of horses and the wheels of carriages from slipping. The boxes keyed together, as shown in fig. 1, and the interstices are filled with any composition made of stone and shells, &c., and held together by any suitable cement. Fig. 2 shows the cast-iron box or block for a pavement, ready to be laid down upon the earth. It is of a cylindrical form.

A represents the interstices between the blocks when laid down, and also the interstices or hollow parts cast in each box. B is

Fig. 2.



the outside circular rim of each box, and C represents the grooves spoken of in the rim, radial partitions or ribs, and inside circular rim. The ribs and rims extend to the bottom of each box, and the interstices also extend down. Each box has outside flanges for the purpose of keying one into the other, as shown in fig. 1, so as to render the whole immovable and firmly keyed in position. Each block is about five inches deep, and one foot in diameter, but a larger size may be employed. Each block may be made with any number of compartments in it. The thickness of the rims and ribs in each block is about one inch at the top, and this thickness extends about one inch down, then tapers to a thin rim at the bottom.

It will be observed, in fig. 1 there are dark notches in some of the projections, these are clefts for the reception of the key of the next block. The keys or flanges, and the clefts or commissures are so arranged around the outside of each box, that each key rests in a commissure of the neighboring box, and thus, as represented, each box rests upon the ground, and is also supported by three other boxes, which it also aids in supporting. Thus the whole pavement is firmly linked together, and it is impossible for any one box to move or rise above or settle lower than those around it. This is the iron pavement which has been laid down, and has been successfully tried in Boston. It evidently appears to be an excellent invention for the purpose intended, and we hope that all doubts as to its economy and practicability have been fully dissipated.

More information may be obtained by letter addressed to J. Atkinson, Esq., No. 81 Washington st., Boston.

New Water Wheel.

A water wheel of an improved description, by which the whole effective force of the water is obtained, has been invented by Simeon W. Draper, Granville Draper, and Reuben M. Draper, of Boxborough, Mass., who have taken measures to secure a patent. The improvement refers to horizontal water wheels, and consists in having two wheels, one encompassing the other, which are so arranged that while one wheel is operated by the reaction, the other is driven by the direct action of the water, the power being communicated to a driving shaft by bevel geared wheels. In this arrangement the former, or re-action wheel, is encompassed by the other, the space between the two being filled up with the buckets of the outer one, and the shaft of the first-named wheel works inside the shaft of the other, which is made purposely hollow. There is a shoulder or projection on both of these shafts, that of the hollow shaft resting on the other, and the outer wheel likewise has a bearing on the interior one. The water is admitted into the inner wheel, through a supply-pipe, and rushes out of the arms that project from its periphery upon the buckets of the outer one, the two wheels being propelled in a contrary direction.

Time Indicator.

An improvement on the above useful appendage to a merchant's counting-house has been invented by J. N. Ayres, of Stamford, Conn., who has taken measures to secure a patent. For this purpose, instead of the ordinary method of arrangement by which separate cards are required every day and month, the inventor employs three endless bands, with the days of the week, dates of the month, and months of the year, printed on their front sides. These bands pass over rollers inside a box, and are made to appear successively as the rollers are turned through slots or apertures, by which they are brought to view, and as a protection from injury there is placed in front a piece of glass, or some other transparent substance through which they can be read off.

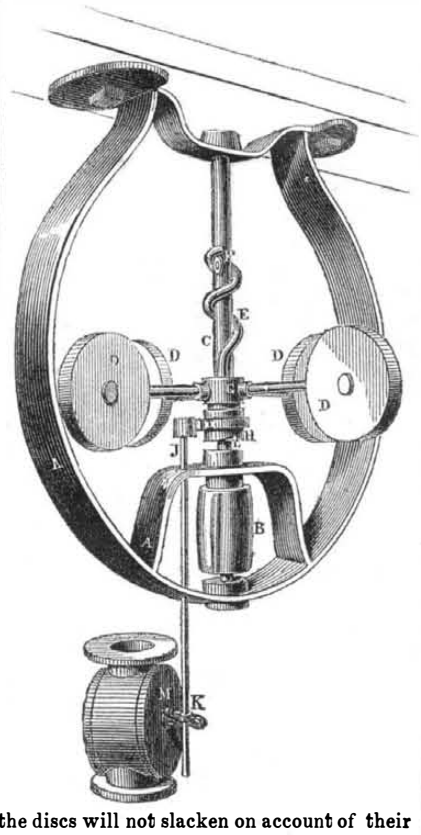
Self-Loading Cart.

Measures to secure a patent for the above have been taken by Samuel Parks and Francis C. Rue, of Warren, Ill. The novelty of this cart consists in having one or more plows underneath the axle, and in fitting around the wheels a series of buckets, by which the cart is made to both dig up the earth, and likewise load for itself. The plows are secured to an adjustable frame underneath the cart, and the depth to which they are required to enter the ground is regulated by a lever attached to a transverse bar at the back of the frame, which is operated by the attendant. The position of the lever and that of the plow-share being maintained by resting the front end of the former upon the step belonging to a bar which is suspended in front. The earth is raised up into the cart by a series of buckets formed around the wheels, and which, as they revolve, are filled and discharge their contents into the cart.

Tremper's Pneumatic Governor.

The ordinary Governor, it is well known, acts on the principle of the pendulum, a circumstance that imposes limits to its velocity, and which, in some cases, is objectionable. The governor here shown is free from this defect, and also possesses great merit on the score of simplicity and economy of construction. The theory of its action rests on the effects of momentum and the resistance of the air, which will be readily perceived by a slight inspection.

A A is an iron frame for supporting the spindle, C, which is kept in motion by a belt running on the driving pulley, B. D D D D are four heavy metallic discs, presenting considerable surface to the air, these are fixed to the ends of inflexible bars which radiate from the bush or socket, G, this latter turns loosely upon the spindle, and can also slide up and down it. Affixed to G is the curved or spiral rod, E, whose action is simple and efficient. For when the governor is put in motion the spindle will impel the roller, F, attached to it under the spiral, which is consequently forced up, drawing with it the bush, G, and its appendages, but when the discs have acquired a velocity equal to that of the spindle, the further ascent of the spiral will cease. Should the speed of the spindle diminish, the velocity of



the discs will not slacken on account of their acquired momentum, and in consequence their weight will induce the spiral to descend. The valve inside the valve box, M, is operated by means of a rod, J, which, by the intervention of I (constructed in the usual manner), partakes of the traverse of the bush, but not of its rotary motion. H is a stop to limit the descent of the discs, &c., this stop is secured to the spindle by the pin, L. The mode of attaching the rod, J, to the valve stalk, is shown at K. The valve is not shown here, but it will doubtless suffice to observe that it is perfectly balanced, so that it works as easily under any pressure of steam as when not in use, needs no packing, cannot get out of centre, and is free from every objection that the most critical might allege against its efficiency. A governor of this description for a 100 horse-power engine weighs only 15 lbs.

For further particulars address John Tremper, Buffalo, N. Y.; S. C. Hills, 12 Platt st., New York City, Agent.

© 1853 SCIENTIFIC AMERICAN, INC

Scientific American

NEW-YORK, APRIL 16, 1853.

Great Increase of our Steam Marine.

The United States of America presents the most extraordinary spectacle of rapid progress in greatness and power, of any nation that has ever existed. There is an inherent vitality and energy in our people, which enables them to transform the waste places of our land into fruitful fields, and lonely deserts into teeming cities, and that with a facility and power akin to the skill ascribed to the old alchymists, in whose magic hands iron became gold, and brass shining silver.—With a most wonderful increase of cities, villages, and everything connected with industrial progress on land, no less wonderful has been our progress on sea—in building ships and subduing the winds and waves by the mighty power of steam. Six years ago there were only two mercantile steamships in the whole United States; these belonged to New York, and were but insignificant in size.—Then we had no mail steamships, and the star spangled banner had never floated but in a solitary instance in a foreign port above the quarter deck of an American steamer. The smoke from American funnels never was seen afar on the ocean, and in this respect England alone reigned mistress of the seas. But what a change has taken place in that short period. The four largest and as yet the fleetest ocean steamships in the world belong to our country, and the rivers Mersey in England, the Seine and Weser in France and Germany, are now visited regularly by eight American steamships of large tonnage and powerful engines. The two mail steamships Washington and Hermann, which ply between New York and Bremen are 1,700 tons burden each; the two which ply between New York and Havre—the Franklin and Humboldt, are 2,200 tons each; and the four of Collins' line of steamships are each 3,000 tons burden, making an Atlantic fleet of steamships amounting to 19,800 tons burden. On this day six years ago not one of these vessels had disturbed the waters of the great deep.

Besides these noble vessels there are seventeen steamships of an aggregate tonnage of 21,912 tons plying regularly between New York and our Southern cities and the West Indies, and there are no less than 41 of an aggregate tonnage of 67,336 tons engaged in the New York, California, and Oregon trade. All these are American built steamships, and comprise a mercantile marine larger than that of all the other nations in the world—Great Britain excepted—put together. All this steam marine has been created in less than six years. Do these figures not exhibit a touch of power more wonderful than that of any genii of Oriental tale, that of Aladdin's wonderful lamp not excepted. Side by side with us, the people of Great Britain have been running a race in increasing their steam marine also. Within the same period they have built a greater number of steamships than we have, and the same circumstances which have operated so powerfully to open up new fields of trade with us, now operate upon them—we allude to the gold discoveries of California and Australia. It is difficult for the mind to entertain at once a just idea of the magnitude of these stupendous changes in our steam marine, a contemplation of them makes "the boldest hold his breath for a time." It is very natural to ask, "can our country go on much longer at such a rapid pace; will a period not arrive at no distant date, when like other nations of the old world, ours will also cease to make such strides in industrial progress—when it will, to use a common term, *stand still*? We have no affirmative answer to return. Our nation, if we keep united, and hot-headed men do not foolishly precipitate us into war with powerful foes, must go on with just as rapid strides for the next thousand years as it has for the last fifty. We have more natural resources of all those things which go to make a nation great and powerful than all the known kingdoms on this globe. We, like the House of David, must increase, while other nations, now great and powerful, will decrease.

A Mountebank Professor Lecturing on the Ericsson.

Our readers will bear with us for so frequently referring to the Ericsson. So many men from different motives have assailed us, because from the first we have given good reasons why hot air can never supersede steam,—that it is altogether inferior to it as a motive agent—we have to notice some of these attacks, lest our silence might be construed into an argument in favor of those who propagate falsehoods. We have stood decidedly alone upon this subject, and have done our duty conscientiously with a regard to truth only. Without any reason for so doing, many of our editorial brethren of the press, in various parts, have used language towards us which at present we will treat with silent contempt; we have laid up their words, and "will bide our time."

We learn by the "Louisville, (Ky.) Journal" of the 24th ult, that a certain Prof. Rainey delivered, on the evening of the 18th ult., a lecture in that place, on the Ericsson. The "Journal" says, "the lecture was delivered to one of the most intellectual houses to be obtained in Louisville." So far as it regards the capacity of judging of the comparative merits of steam and air engines, we suppose that many of those who heard the professor, might be considered *intellectually* far beneath a less imposing audience. We are sorry at least that any person in Louisville should have been imposed upon with any of the falsehoods represented to have been uttered by the lecturer, as represented in the "Journal." In the course of his lecture, this professor said (we quote from the "Journal") 'while Mr. Ericsson's thoughts were turned on this subject (hot air as a motive power) many persons in Europe and *even* America, were experimenting on air engines, or such only as heated a new supply of air at every stroke. Mr. E. in the meantime discovered the regenerator, and proposed it to the *Savans* in London where he was residing. Prof. Faraday, among others, eagerly grasped at the theory, and was so pleased with it that he lectured on the new discovery in the Royal Institution, in London, &c. Dr. Ure also supported it. About this time a Mr. Stirling, of Scotland, heard of the idea of a regenerator, which he saw at once was indispensable to an air engine, and attempted its construction, although he had no idea how Mr. Ericsson's regenerator was formed, as he had not permitted his developement to go to the public. Mr. Stirling constructed a regenerator *which was a tube from one half to two and a half miles long*, and supposed that the air in passing through it would be heated, or that the hot air, in escaping, would deposit all its heat. It took the air too long to pass through, and produced too few strokes. When the air was heated in a tube, its expansion was lost to a great extent on its sides. *This* is the caloric engine that the Scientific American has so industriously paraded before the mechanical and scientific world, and which, as that journal knew nothing of the structure of Mr. Ericsson's engine, must be the only engine, and consequently it has deceived the people, by what the slightest observer will see is palpably misrepresented." All that we have quoted above from the "Louisville Journal," respecting Stirling's air engine, and what is asserted respecting our conduct, we pronounce to be falsehoods, uttered for the purpose of deceiving his audience regarding the real merits of the case.—We never published an illustration of Stirling's air engine in the Scientific American, but we did that of Capt. Ericsson—the one he first patented in 1833—in No. 20, on the 29th of last January. We copied it from Sir. Richard Phillip's "Arts of Life," as we stated, and any one who has read that work knows this to be true. The said air engine of Capt. Ericsson, had a tubular regenerator, but whether the tube was half a mile or two miles and a half long we cannot tell, we can only say it was not so long as the falsehood uttered in the face of that intellectual audience in Louisville by this itinerant lecturer. The falsehood consists in this, that he said we put forth the air engine of Stirling having a tubular regenerator for Capt. Ericsson's, and thus deceived the people, whereas we never published Stirling's engine, the one we published with the tubular regenerator was Ericsson's. If any of that audience in Louisville had read the work referred to, he could easily see that the professor was uttering what was not true. Let any one examine the said work, and dare to say that we deceived the public by *misrepresentation*, as this professor charges us. Our columns are open to Capt. Ericsson or any of those interested in his engine to contradict us in these statements if they can. We have resorted to no subterfuges nor misrepresentations in speaking of the Ericsson; we have had no personal interests to subserve, and no personal feelings to gratify in uttering our opinions respecting it. We have spoken of those connected with the enterprize as honorable men, and would be glad if it could prove successful. Our language has always been respectful, and no wilful untruths have we ever uttered about it.

Who this Prof. Rainey is we do not know. The "Louisville Journal" speaks of him as somebody of consequence. Only let a man have *Professor* before his name, and go among strangers, and then be he hungry or henpecked at home, he at once becomes a hero, and that too among no class of people so readily as among those who are so often called in snobbish language "*intellectual people*," not engineers and machinists mind you.

The "Journal" states, that "the professor intends going to London early in May, and will lecture in but three or four other cities." He had better go to school for a while longer; the most of his lecture reported in the "Journal" is derived from an old lecture delivered in Boston about Capt. Ericsson in 1843, by John O. Sargent. We can show any person the printed lecture. We hope the professor while on his way to London will visit New York and make the same statements here that he made in Louisville, as reported in the "Journal."

As the "Louisville Journal" receives the Scientific American regularly, the editor can turn back to No. 20, and see whether we are honest in the matter or not, by comparing the statements we have made with the work we have referred to, which is surely in some library in Louisville. By our last number he would also see that the Ericsson was already getting new crowns to its furnaces, although, as reported in the "Journal," the professor stated *they could not burn out sooner than boilers*. All we have said will come out straight before twelve months pass away.

In connection with this subject we would state that we have read with great satisfaction an editorial article in the "Albany (N. Y.) Evening Transcript," of the 31st ult., on hot air as a motive agent. The article was a reply to a correspondent, and exhibits a great amount of knowledge on the subject. One remark shows the editor to have looked into it far beneath the surface; it is this: "there are mechanical difficulties in the direct application of heat as a motive agent that cannot be overcome." This shows to us that he sees deeply into the difficulties of hot air.—Neither *dry* steam (stame) nor hot air can be profitably employed as motive agents, for steam is not only a motive agent but a lubricator also, and thus has qualities which hot air does not possess. Hot air engenders great friction, and renders valves and pistons so difficult of working tight, that it never can be employed with profit in comparison with steam as a motive agent.

Events of the Week.

Death of Orfila.—By the late news from Europe, we learn that Orfila, the celebrated chemist, is dead. He died in Paris at a good old age. He was a Spaniard by birth, and was a native of the Island of Minorca, and born in 1787. For a long time he was at the head of all the chemists in the world in Toxicology. He was naturalized in France in 1818, and in 1824 his learning and taste were so appreciated in Paris, that he was appointed to the chair of Chemistry in the Medical school, which he filled until he died on the 4th of last month (March.) He was a fine lecturer and very eloquent. He published a treatise on poisons as early as 1812. The amount of poisoning in Spain perhaps led his mind early in that direction. His first work he successively enlarged and heightened by numerous other works relating to Toxicology Medical Chemistry, and Legal Medicine.—His Elements of Legal Medicine, which has passed through six editions, his published Lectures on Medical Jurisprudence, and the Juridical Exhumations, and some others of his writings form a body of medical jurisprudence, quoted as supreme authority in the criminal tribunals here. All the physical causes, indications, and effects of death by violence, are described and explained, and their analogies with those of natural death marked out.

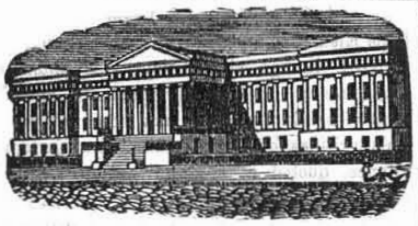
He was consulted in every case of poisoning which took place in Paris for many years, his opinions were implicitly relied upon in every case, and the celebrated poisoning case of M. Lafarge, by his wife and her paramour, the accounts of which were published along with Orfila's investigations in many of our papers a few years ago, has rendered his name familiar to all our people, as well as our doctors and chemists. His was one of those complete minds whose faculties may be applied with equal success to a diversity of objects.

His administrative talents were excellent; he was a fine singer and understood engineering. One day at a general meeting of the French Northern Railway, a discussion arose among the principal men charged with the financial management of their great enterprize. The question in debate was surrounded with difficulties. Orfila presents his view, and proposes his solution of it. The Banker Rothschild, a chief manager of the Company, immediately begged the Professor to become one of its Directors. It was while returning home in the rain from one of their meetings that he felt the first symptoms of the malady that so soon put an end to his career of active usefulness. It is also said that his health had been injured by exhalations from the poisons with which he experimented.—Strong and true to the end, the final effort of his dying will was expressed in an order for the post-mortem examination of his body—his last contribution to the progress of science. He has left 120,000 francs to found prizes for the solution of questions most important to the advancement of Toxicology and of medicine generally.

Dreadful Steamboat Explosion.—On the 23rd of last month while two steamboats, the Neptune and Farmer were racing from Houston to Galveston, in Texas, the boilers of the Farmer exploded with terrific violence, shattering the boat to pieces, killing the captain and a number of others, and severely wounded many of the passengers. Mr. Stackpole—a passenger—was expostulating with the Captain on the danger of racing when the accident took place, and the passengers had prepared a writen protest against such reckless exposure of their lives. Many people have asserted and do assert that passengers are the cause of steamboat racing by a desire to beat an opposing boat. This is not true; passengers are in general opposed to racing, and here we have an evidence of this being so. When the Henry Clay was burned last summer, the passengers were opposed to the race, evidently carried on between that boat and another. The captain of the Farmer paid the penalty of his recklessness; what has been done to bring those in charge of the Henry Clay to justice. Had the owners and captain been poor, miserable, outcast men, they would perhaps have been hanged before this; but wealth and influence are just as powerful in arresting the arm of justice in our Republic as in any despotic country on the face of the earth; yea, in many cases more so. This is a stigma upon our moral character as a people, which we should wash out at once.

New Hot Air Enterprize.—We understand that an experimental boat is now building in this city, under the superintendance of Mr. Renwick, ex-Examiner of the Patent Office, for a wealthy company, which is to be driven by hot air engines like those of Messrs. Stirling, with some improvements. Her propelling device is to be a central wheel, which is to be changed for some other device if found not to answer. They might as well save their money, it will never be of the least practical benefit. We want something better than steam, not interior, as hot air is. When it proves superior we will make a *note* of the matter, and faithfully report progress.

© 1853 SCIENTIFIC AMERICAN, INC



Reported Officially for the Scientific American

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 5, 1853

FORMING YARN BY FELTING—By J. H. Bloodgood, of Rahway, N. J.: I claim the formation of thread or yarn from woolen rovings, by the process of felting, instead of twisting or spinning, substantially as set forth.

GRAIN HARVESTERS—By T. D. Burrall, of Geneva, N. Y.: I claim, first, the additional apron, to convert the usual rear discharge into a side discharge of the cut grain, constructed and arranged as set forth.

Second, the combination of the curved supports and the adjustable journal box piece, to preserve the relative positions of the cogs in the mitre gearing, and at the same time allow of raising and depressing the driving wheel, the gearing, &c., being constructed and arranged as described.

PLOWS—By Solomon Horney, Jr., of Richmond, Ind.: I claim constructing the shank hollow in a single piece, with two closed ends, as described, and securing the same to and with the share and beam, by means of the master bolts, and the short bolt for passing through the slot in the top end of the hollow shank, for varying the position of the shank with the beam, and for giving additional security to the fastening of the same, as set forth.

WATER METERS—By Wm. H. Lindsay, of New York City: I do not claim operating the valves of the main engine or cylinders, by means of a secondary or independent engine, the valves of which are actuated through the medium of the primary engine, the same being well known in the construction and operation of hydraulic engines, &c.

But what I claim is, first, operating, as described, the valves of a secondary engine, by the main engine, through a portion of their movement, and completing the same through the medium of the secondary engine.

Second, connecting the cross-head of the main cylinder with its valves, in the manner described, so that said valves will close the ports of the main cylinder, in case the working parts of the secondary engine should fail to do their duty.

Third, I do not claim the balancing of slide valves, as such has heretofore been done in various ways; but I claim forming a recess or recesses, in the under or working side of the slide valve, in combination with the secondary opening or openings, through the seat, or in the side of the port or ports, for the purpose and in the manner, substantially as described

Fourth, I do not claim making a connection between opposite sides of the plunger piston at a certain portion of its travel, as that has heretofore been done; but I claim the combination of the bridge in the cylinder, in combination with the openings in the plunger, for the purpose as described.

FEEDING BLANKS TO SCREW MACHINES.—By Thompson Newbury, of Taunton, Mass.: I claim the slide, substantially as described, passing up through the bottom of the hopper, in the manner set forth.

SASH FASTENERS—By Henry R. Nott, of Lewisburgh, Pa.: I claim, first, arranging the spring catch fastenings for the upper and lower sash, about the middle of the frame, in such manner that the upper sash can be managed or fastened and unfastened without interference from the lower sash, as set forth.

Second, the particular arrangement of the attachments on the one plate of the two spring fastenings, said arrangement consisting in the swing bar (thro' which the spring bolt of the upper sash is operated) with its hinge joint in the rear of the spring bolt and the bar, and the bolt of the lower sash, by which I gain economy of room and a cheap and efficient action upon the two sashes, in the manner set forth.

PREPARING VEGETABLE FIBRE.—By Charles J. Pownall, of Addison Road, England. Patented in England for Ireland Aug. 11, 1852: I claim the mode of subjecting fibrous vegetable substances to repeated mechanical pressure, and the action of a stream of water for the purpose of depriving them of resinous or gummy matters, and also resolving them into their ultimate or finer fibre, as described.

SECTOR PRESSES—By Samuel Rust, of New York City: I claim, first, one or more bearing pieces at the sides or in front of the eccentric sector, acting upon any fixed point or rest on the press frame, for the purpose of raising or withdrawing the punch or pressing appendage, by power applied to the sector, in the reverse direction to that by which the pressure is given, as specified

Second, allowing to the eccentric sector a sufficient amount of motion directly in the line of the pressure, to enable it to follow and always keep in contact, and in proper relation to the eccentric sector, as set forth.

THREADS OF WOOD SCREWS—By Elliott Sawyer, of Berlin, Ct.: I do not claim the combination of mechanism for holding and rotating a screw blank, and mechanism for carrying a cutter or chisel, against the blank, and regulating the movements of that cutter by a screw; but I claim the endless elongated chaser as constructed and made to turn and move on a pin, or its equivalent, and to act against a screw blank while in rotation and movement, as specified.

And in combination with the elongated endless chaser, and the screw blank holder, I claim the feeding cam or apparatus as applied, so as to be operated by the chaser, and feed it forwards against the screw blank, as specified.

And in combination with the elongated endless chaser and its sustaining carriage, I claim the movable rail and groove, together with mechanism for elevating and depressing the rail, as stated, the mechanism, as described for such purpose, being the two grooves and their inclined planes, and the studs and the springs of the rails.

And in combination with the elongated endless chaser and its operating screw and elongated endless worm gear, and the feeding apparatus of the chaser, I claim mechanism for withdrawing the driver from the head of the screw, or releasing the screw from the machinery, by which it is put in rotation, mechanism for removing the cut screw from the endless chaser, and presenting another screw blank to the operation of it, as described, and mechanism for restoring the driver and other parts to their correct positions, to again set in motion the screw cutting machinery; the machinery as described for actuating the driver being the cam, pitman, rocker shaft, bent arm and forked lever, that for removing the cut screw from the chaser, and presenting to it a fresh screw blank, being the rotary blank holder, gear wheel, and arms; that for restoring the driver and other parts to their correct positions, to again set in motion the screw cutting machinery, being the pitman and the spring, the whole being applied and made to operate together, as specified.

WEAVING CORDED FABRICS—By Wm. Smith, of New York City: I do not claim two shuttles, as two or more have been used in various kinds of weaving; but I claim the process of forming a fabric by the combination of stationary movable warps, with two weft threads passed simultaneously through the two sheds formed above, and below said stationary warps by the movable warps.

MIXING AIR AND STEAM FOR ACTUATING ENGINES—By Wm. M. Storm, of New York City: I claim generating the steam for intermixture with the air, or other gaseous body, in direct contact with the latter; the same (the air or gas) not being the hot product of combustion, nor to arrive at the place of admixture from direct contact with any body of fuel undergoing combustion, for the reasons stated.

I also claim the plan of generating the steam for such purpose in some comparatively dry vessel or heater, for the reason given, the water from which such steam is so generated being mainly held while vaporizing, in suspension in the air, for the objects specified, the air and water, to that end being caused by some adequate means, to meet with an extensive surface of mutual contact, as explained.

BRAKES FOR RAILROAD CARS—By Gregor Frinks of Jersey City, N. J.: I claim so combining the shoe frame with the ordinary truck or car, as that it may be raised and lowered, by the operation of the brake lever, so as to be carried by the truck or to receive the weight of the car, to aid in applying the brakes, and so that the wheels shall not come in contact with the shoes, but be free to turn, as described

Also giving the truck or car a motion independent of the shoe or brake frame, by means of the curved inclined planes or their equivalents, on the shoe frame, up which the axles of the trucks may roll by an easy swinging motion whilst its entire weight continues to aid in appyling the shoe or brake, to the surface of the rails, as described.

STOVES—By J. J. Updegraff, of Selin's Grove, Pa.: I claim, first, the combination of the central hot air passage, the annular fire chamber, and tubular fire pot for the full economy of heat, as set forth.

Second, the combination of the outer casing, tubular fire pot, and central hot-air passage, as described, so that the currents from each may all unite and co-operate, as set forth.

Withdrawals from the Patent Office.

In the last number of the "Scientific American" you commented justly on the attempt made by the Patent Office, to retain the whole fee of a rejected applicant, who withdraws his claims and relinquishes his model. No other views than those you have taken can, in sober earnest, be entertained of the plain meaning of the law as you have quoted it. How it ever entered into the mind of the late able Commissioner of Patents, to change the established policy of the Patent Office, and to retain the $20, which has been returned by every previous Commissioner of Patents, according to the plain and simple meaning of the law, is more than I can comprehend. He surely consulted some person, who advised the change, and suggested the new policy. As you have pointed out the confliction of the new order with the law, let me endeavor to show, by a few brief arguments, that the new decision is illogical, so far as it regards the correct mode of reasoning, to find out the meaning of what is obscure in some laws; in other words, to arrive by reasoning at what was the intent of the law makers who enacted the laws. It certainly never entered the mind of a single Senator, nor member of Congress, who constructed, revised, or voted for the new Patent Law of 1836, to charge, incongruously, only $10 for the examination of an application for a rejected patent, and no less than $20 for that of a simple caveat; yet this is what the new order of the Patent Office does. Reasoning in this manner to discover the intent of the enactors of that Act, a mind possessed of but a very small amount of logical acumen would at once conclude that the new policy of the Patent Office was wrong, for the examination of the application for a patent, upon which a caveat had been filed, is no more difficult nor troublesome than one upon which no caveat papers had been filed.

By no rule of logic or reason could we conclude that it ever was the intent—that it ever entered the mind of the makers of the Act of 1836—that $30 should be charged for examining and rejecting an application for a patent upon which a caveat had been previously filed. The letter of the law, therefore, the rules of logic, and the reflections of the mind, lead us to conclude, that, as the patent law says "*in every case*," when an application for a patent is rejected, twenty dollars are returnable to him who withdraws his application and relinquishes his model.

JUNIUS REDIVIVUS.

New York.

The Labor Movement.

Our country is at various periods visited with certain epidemics, which run like wildfire through the veins of the mass of our population, and are propagated from class to class with destructive intensity. These epidemics are of a social character, and are generally known among the working classes as "strikes" or combinations of particular trades to raise their wages. Their effects are generally disastrous to all concerned, both employers and employed, and always more hurtful to the latter than the former. Indeed, instances are not rare, if we look to history, in which flourishing communities, and large commercial and trading cities have been irremediably ruined by the insensate conduct of combinations of this kind. An epidemic of this description is now raging in our midst, and "strikes" of all the trades in New York City are now going on. From them we augur no essential benefit, as their proceedings are of too irregular a nature to meet with general success. The ostensible cause put forth is the rise in rent and provisions, which require, it is maintained, a corresponding advance in workmen's wages, and to obtain this end some trades have already struck and others are threatening to do the same. In nearly all cases an indiscriminate rise of 10 or 15 or 20 per cent. has been required, irrespective of the worth of each workman or of the profits of the employer; such demands have been, in many instances, resisted, and taking every thing into consideration, it appears to us with much justice. This manner of redressing supposed grievances has doubtless been adopted by the leaders of the movement as the most taking with the mass, who, they naturally suppose, will be tickled by such a scheme, where all are confounded together, the good, bad, and indifferent. Indeed, the fact of such being the case gives the present movement rather the appearance of that of a disorderly multitude than of organized societies. Trade movements, when carried on in a proper peaceful manner, may be profitable to all concerned, and where there are evils that require to be redressed, no one can complain if the members of a trade unite for that purpose. We have no doubt that such is the case with many trades, and that they labor under grievances in many instances that require remedying. But to succeed in doing so employers must be met in a friendly spirit, and mutual forbearance be manifested on both sides. An indiscriminate rise of 15 or 20 per cent. is not likely to be acceded to by employers which would place workmen of different calibre on the same footing, elevating the industrious and the idle, the skilled and the ignorant artizan by the same standard. Such a demand, we are quite sure, will never be acceded to by employers generally, for it takes away their right of free choice, and of giving to every one according to his supposed merit. A demand of this kind is equally tyrannical on the workman, for it puts all upon the same footing, and compels the industrious, by striking, to injure himself for the idle—such a system can only end in contusion and defeat. An advance, if such is to be the case, in workmen's wages, ought to be commensurate with their abilities, and of this the employer is the best judge; any plan of so much per cent. is mere fustian, for it is founded upon injustice, and will not, we surmise, be acceded to.

We would, therefore, counsel our mechanics and others to listen to their better reason, and not to be led away by artful demagogues, who will only use them for their own selfish purposes. Let our workingmen organize into "Trade Societies," if they like, and if they labor under any grievances, let them try to remedy them in a sensible manner; but as to mass meetings and holiday processions, they will only end in nothing. "A fair day's wages for a fair day's work," is no doubt a good motto, but the two must be proportioned, and no man has a right to a fair day's wages for a bad day's work, and vice versa. On the other hand we would advise employers to consider the demands of their workmen in a friendly manner, and to show them the inconsistency of what they ask. If they do this, and make it a rule, as is their interest, to mark out the deserving and raise wages according as workmen show skill and industry, there will be no danger of strikes. But then an employer should not be above his business, he must not trust the management of his shop entirely to any foreman, or expect that another will be as watchful in finding out the deserving as he would himself. Strict justice and even-handed impartiality in giving to every man according to his worth, will be more effectual in preventing strikes than any rise of so much per cent. No workman is entirely a creature of dollars and cents, and although he works for his daily bread, he most often has a higher feeling of honor than a prince or an emperor, and any outrage upon justice by the employer, in favoring some more than others, is more conducive to strikes than the rate of wages. An ill-governed shop will always be the hot-bed of strikes, whatever be the rate of wages, whether much or little, and the best plan that the employers can adopt to counteract the efforts of would-be demagogues, is to head the movement themselves. Let them meet their workmen in a fair spirit, treat them all with equal justice, frown down all cabals and intrigues, and they will find that their right influence will be able to render nugatory every attempt to excite disaffection or a disproportionate rise of wages. A contrary course will only serve to engender a hostile feeling, and to draw a line of demarcation that ought never to be seen in a free country between the employer and the employed.

The New Silver Coinage.

The officers of the Mint at Philadelphia are now closely engaged in coining the new silver pieces of the denomination of three, five, ten, and twenty-five cents. In order to meet the want of small silver change, the work at the Mint now goes on both at night and by day. The new quarter of a dollar weighs precisely four pennyweights, and is 7½ grains less than the former piece. As compared with the current Spanish quarters, the new coin is decidedly heavier and somewhat finer. None of the new dimes or half-dimes have yet been struck. The moulds for the gold bars are intended to make bars of the value of $200, $1,000, and $4,000 each.

A Railroad Well Watched.

The Hudson River Railroad, 150 miles in length, employs 225 "flag men," stationed at intervals along the whole length of the line. Just before a train is to pass, each one walks over his "beat," and looks to see that every track and tie, every tunnel, switch, rail, clamp and rivet is in good order and free from obstruction. If so, he takes his stand with a white flag and waves it to the approaching train, as a signal to "come on"—and come on it does, at full speed. If there is anything wrong he waves a red flag, or at night a red lamp, and the engineer on seeing it promptly shuts off the steam, and sound the whistle to "put down the brakes." Every inch of the road is carefully examined after the passage of each train.

Important Patent Case---Hay and Cotton Press.

On last Saturday, the 9th, a very important patent case was decided before Judge Nelson, in this city. The plaintiffs were Tyler & Pendleton, vs. F. Hyde and others, for an infringement of the patent for Tyler's Cotton Press. A verdict of $11,125 was given for the plaintiffs.

Plaintiff T. obtained a patent for a machine for pressing cotton, the principle of which was two levers acting by means of the segments of a circle immediately on the top of the cylinder and the platen. It was contended that defendants infringed the patent by making some machines on the same principle, and sending them to Mobile, where they are in operation, to the injury of plaintiffs. The machines made by defendants have two sets of levers, the rods, in each case, being half the lengths of plaintiffs.

How to Make Corn Bread.

One quart of sour milk; two table spoonsfull of saleratus; four oz. butter; three eggs; three table spoonsfull of flour; and corn meal sufficient to make a stiff batter.

© 1853 SCIENTIFIC AMERICAN, INC

TO CORRESPONDENTS.

H. G., of Ill.—Your letter covering $21 for subscribers was duly received. We have entered all the names for 1 year each, and sent as many back numbers to the first six on your list as we have got, and regret very much that we cannot furnish them complete.

W. & Co., of Ohio.—We have no one cent stamps to send, and have applied the dollar received from you towards the continuation of your paper.

J. T., of Md.—Your advice is not appreciated, and we very much question the motive that induced your remarks.

W. H. M., of Ind.—The engravings of your invention will appear in the next number.

R. McK., of Ind.—A pamphlet will be issued in a short time containing useful receipts at a low price. The majority of receipts published in books are not correct.

T. T. G., of Pa.—You should write to the Patent Office for such information as you solicit of us. If you have been swindled by your agent we regret your misfortune, but cannot intercede in your behalf until you have first withdrawn your business from his hands.

H. L. A., of Wis.—You are correct about the cooling of the cylinders with the cold water. You can avoid this by using a steam engine of the usual form, one double-acting cylinder, and a double acting pump. You will thereby have just the same parts in your engine.

J. J., of Miss.—Your engine at that pressure will be about 4 horse power. The power will be found out by multiplying the pressure in pounds on every square inch of piston into its velocity in feet per minute, and dividing by 33,000.

A. C. C., of Mass —Yours is such a case that we could not say much about it. There are persons in Boston who are very enterprizing about such matters We have seen a machine professing to accomplish the same thing.

J. S. S, of Phila.—Air cannot be employed in any manner to successfully compete with steam, it is too bulky, its nature is not the thing.

J. M. S., of Mich.—We cannot judge of your brake without the opportunity of examining a sketch. So many modifications having been made in brakes and the means of operating them that it is almost impossible for us to give a satisfactory opinion without.

J. de B., of Ohio.—J. B. Creighton, of Tiffin, Ohio, is the inventor of a machine for pulling stumps, which is capable, we should think, of performing satisfactorily. You might ascertain by writing to him.

T. & H., of N. C.—Messrs Sarony & Major, of this city, could get you up a lithograph of carriages suitable for a show bill. You had better write to them about the matter.

J. H. C., of Pa.—There is nothing especially important in your "oil cup." We may, however, publish it at some future time, for the benefit of all whom it may concern.

C. A., of Va.—The use of caloric as a substitute for steam, would undoubtedly prove a boon to mankind if made successful. We would gladly chronicle its triumphant success, but we are convinced that it is based upon a mechanical fallacy, which time is rapidly developing. We could not withhold our opinion and do justice to those who expect us to speak out. Among the most painful duties we are called upon to perform, is to oppose the claims of inventors, we must do it, however, when such claims are contrary to established facts, let the consequences be what they may.

O. D, of Ga.—There is such a contrivance as alluded to in the article in question, which may be thus briefly explained: a light bar is placed horizontally near the paper, and on it are secured two or more curved strips of steel, by slightly turning the bar these strips of steel serve as a species of rake to pull forward the paper and present it to the fingers. This motion is given at the proper time by a cam, and the operation is further assisted by a slight tilting motion which is given to the feeding board. It is not, however, to be inferred that this apparatus dispenses with a person for feeding, its object being merely to ensure correctness.

H. C., of Me.—It is possible that your "close analysis" of the Caloric Engine may turn out the same as in the case of the "Static Pressure." By reference to a letter you wrote us August 2nd, 1851, you make use of the same terms in approbating the claims of Sawyer & Co. We are probably more particular and less enthusiastic in our examination of scientific matter. Your advice might be useful if properly applied, but not needing it ourselves we must beg of you to withhold it for self-instruction.

C. A., of N. Y.—We are disposed to give you all proper credit for your exertions; the result of your labors are certainly commendable, and we are sorry that you have been anticipated by others.

Money received on account of Patent Office business for the week ending Saturday, April 9 :—

H. S. W., of O., $20; S. & McK., of N. Y., $30; C. V. D. H., of N. Y., $45; J. G., Jr., of Mass, $60; J. O., of N. Y., $25; P. K., of Ct., $8; C. & Co., of N Y., $40; H. C. H., of N. Y., $60; F. D., of Va., $55; H B., of Ct, $25; D. E. McD., of N. Y., $50, G. B. Jr., N Y., $30; E. A. S., of N. Y., $45; L. S, of N Y., $20; W. W, of N. Y., $30; B. D. G., of Miss., $20.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday April 9 :—

P. & R., of Ill.; H. H., of N. Y.; J. T. D., of N. Y.; W.W., of N. Y.; R. M. F., of N. Y.; P K., of Ct.; C. & S., of N. Y.; E. A S., of N. Y.; H. B., of Conn.

ADVERTISEMENTS.

THE AMERICAN ENGINEER, DRAUGHTSMAN, and Machinist's Assistant, designed for practical workingmen, apprentices, and those intended for the engineering profession, illustrated with 200 wood cuts, and 14 large engraved lithographic plates of recently constructed American machinery and engine work, by Oliver Byrne, 1 Vol., large 4 to. Embracing Mathematical and Drawing Instruments, Geometrical Problems, Brackets and Pillow Blocks, Lubricators, Electric Steam Gauge, Horse Power, Parallel Motions, Indicator, Safety Valves, High Pressure Steam Engines, Steamship Engines and Boilers, Rotary Engines, Locomotives, Screw Propellers, Ericsson's Caloric Engine, &c., &c., price $5. The work will be sent to any part of the United States, free of postage, upon the receipt of the amount by mail, address C. A. BROWNE, & CO, publishers, N. W. Corner, of 4th and Arch streets, Philadelphia. 31 6*

WANTED.—By a young man just arrived from England, a situation in an Engineer's or land surveyor's office, or an engagement as superintendant of a section of Railway constructing. Best of references given. No objection to engage for any part of the United States. Address J. R., (care of Mr. Pierce) 5 Debevois st., Fulton Avenue, Brooklyn, N. Y. 1*

MELODEONS.—Patent rights for these instruments in several of the United States, are offered for sale upon reasonable terms. Patented in 1851. Have been thoroughly tested and will be warranted equal in all respects, and in some, superior to any yet offered to the public. Letters addressed MARVIN SMITH, New Haven, Conn., will receive prompt attention, references given. 31 3*

BALLOONS.—A splendid tri-colored French flag-silk balloon for sale. Also a plain silk one, used several times, but in good order. Each of them large enough, when inflated with coal gas, to ascend with a man. Instruction given gratis.
31 4* JOHN WISE, Aeronaut, Lancaster, Pa.

TO IRON FOUNDERS.—For sale, three superb cranes, capable of raising 10 to 15 tons.
31 2 TREADWELL & PERRY, Albany, N. Y.

PIG IRON—American and Scotch, of favorite brands; also Cupola Fire Bricks. Fire Clay, Sand and Foundry Facings of every approved description, for sale by G.O ROBERTSON, & CO., office 135 Water street, (corner of Pine), N. Y. 31 6eow*

STAVE MACHINERY—We manufacture the improved Mowry Stave Machine for slack work, cutting, dressing, and jointing, at one operation, without any handling of the stave until it is finished, after you place the bolt of wood upon the feeding carriage. The machine feeds itself, cutting, dressing, and jointing in a finished and uniform manner 80 to 100 staves a minute. Any kind of timber fit for a stave may be used, even such as could not be rived, as elm, hickory, beach, &c. The cost of running the machine need not exceed, if it equals, 50cts per M, for cutting, dressing, jointing, removing, and piling up, where a machine is kept steadily at work. For machinery and rights in the State of New York, apply to CHAS. MOWRY, Auburn, N. Y.; for machinery and rights elsewhere, to the subscribers, GWYNNES & SHEFFIELD, Urbana, Ohio. 30tf

WANTED—A situation as Superintendent of a Machine Shop, or of the locomotive power department on a railroad, by a capable man of 16 years' practical experience on locomotive engines, and who is a proficient draughtsman. Address "E. T. S.," care of V. B. Palmer, Newspaper Agent, Scallay's Building, Court st, Boston. 30 2*

MORTISING MACHINE—"Dear Sirs, I received the Portable Mortising Machine about three weeks ago; I have used it, and am very well pleased with it; it is the best plan of a machine of the kind I have ever seen. W. R. McFARLAND.
Nashville, Tenn., 1851."
"Since I have been a subscriber to your paper I have purchased one of your Mortising Machines, for which I would not take double its price and do without it. WM. M. FLEMING.
Elizabethtown, Tenn., Jan. 8 1853."
This machine is simple, durable, and effective, and is boxed and shipped for the low sum of $20.
MUNN & CO.

WANTED—In an Architect's Office, in this city, two pupils to learn the business. For further particulars address EDSON & ENGELBERT, Architects, No. 85 Nassau street, New York. 30 2*

WHEELER, WILSON, & Co.—Watertown, Ct., proprietors and manufacturers of Allen B. Wilson's Patent Stitching Machine. Patented June 15, 1852, it can be seen at the Company's Office 265 Broadway, New York. 30 20*

CHILDS, TAINTER & CO., Worcester, Mass., Builders of Daniel's Planers, with Read's feed motion, and J. A. FAY & CO's. celebrated Woodworking Machinery. 24 8*

ENGINEERING—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Taber's Water Gauge, Sewall's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc. etc.
CHARLES W. COPELAND,
29 13* Consulting Engineer, 64 Broadway.

SAND PAPER, GLUE—Excelsior Sand and Emery Paper. ABBOT'S Manilla Sand and Match Papers. Emery Cloth, Emery, Emery Grit, Pumice Stone ground and in lump, of very superior quality; also Glue of all grades, and in quantities to suit purchasers at the lowest manufacturers' prices, for sale by WILLIAM B. PARSONS, 284 Pearl street.
24 8*

LEE & LEAVITT—Manufacturers of every description of Cast Steel Saws, No. 53 Water street, between Walnut and Vine, Cincinnati O. 27 6m*

1852 TO 1856.----WOODWORTH'S PATENT Planing, Tongueing, Grooving, Rabeting, and Moulding Machines.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $760. For rights in the unoccupied towns and counties of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 1amtf

TO ARTISTS, DESIGNERS, &c., one hundred dollars premium.—The government of the Massachusetts Charitable Mechanic Association having determined to procure a new diploma to be used at the Exhibition the present year, hereby offer a premium of one hundred dollars for the best original design of one Artists and others who may be disposed to compete, will please send their drawings to the secretary on or before Saturday the thirtieth day of April next. Each drawing must have some mark upon it, and must be accompanied by a sealed envelope, bearing a similar mark, and containing the address of the party sending it. For the design which shall be adopted by the executive committee the above premium will be paid. The other designs will be returned to their respective owners on demand. Any further information may be obtained by application to the Secretary. In behalf of the Government, FRED. H. STIMPSON, Secretary.
Boston, Feb. 23, 1853. 29 3*

WOODBURY'S PATENT PLANING Machines—I have recently improved the manufacture of my Patent Planing Machines, making them strong and easy to operate, and am now ready to sell my 24 inch Surfacing Machines for $700, and 14 inch Surfacing Machines for $650 each. I will warrant, by a special contract, that ONE of my aforesaid machines will plane as many boards or plank as two of the Woodworth machines in the same time, and do it better and with less power. I also manufacture a superior Tonguing and Grooving Machine for $350, which can be either attached to the Planing Machine, or worked separately. JOSEPH P. WOODBURY, Patentee, Border st, East Boston, Mass. 29tf

THE NEW HAVEN MANUFACTURING Company, New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter: snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash Further particulars can be had by addressing as above, post-paid, or to S. C. Hills agent N. H. M. Co., 12 Platt st, N. Y. 28tf

THE NEW HAVEN MANUFACTURING CO. No. 2 Howard st, New Haven, Ct., are now finishing 6 large Lathes, for turning driving wheels, and all kinds of large work; these lathes weigh 9 tons, and swing 7 1-3 feet, shears about 16 feet long. Cuts and further particulars can be had by addressing as above, post-paid, or to S. C. Hills, agent N H. M. Co., 12 Platt st, N. Y. 28tf.

TO SASH OR CABINET MAKERS ABOUT to commence business.—A couple of young men acquainted with working sash or cabinet machinery possessing a small capital can hear of a good chance for business in a large and flourishing city, where there is no competition, and prices from 50 to 100 per cent higher than in New York or Boston. Address J. E. TURNBULL, Saint Johns, New Brunswick. 28 4*

BOSTON BELTING COMPANY—No. 37 Milk street, Boston, Manufacturers of Machine Belting, Steam Packing, Engine and Conducting Hose, and all other articles of Vulcanized India Rubber, for mechanical and manufacturing purposes. 28tf

SPILLARD AND DODGE—Arch Street Hall Brass Foundry, and manufactory of plumbers' brass; water, steam, and gas cock constantly for sale upon reasonable terms; 213 Arch street, Philadelphia, Pa. 25 8*

AARON KILBORN, No. 4 Howard st, New Haven, Conn., manufacturer of Steam Engines, Boilers, &c. Noiseless fan blowers and machinery in general 25 10*

OLIVER'S WIRE WORKS—No. 25 Fulton st, corner of Water. Locomotive Spark Wire, Patent Self-Setting Revolving Rat Traps; a new invented enclosed Coal and Ash Separator, and Wove Wire of every description. 28 4*

COTTON MACHINERY—Of the most approved plans, from the best shops in the country:—drawings, specifications, and general arrangements for the machinery, furnished at the lowest rates, by W. B. LEONARD, and E. W. SMITH, 75 Merchants' Exchange, New York. 23tf

HARRISON'S UNEQUALLED FLOUR AND GRAIN MILLS—Their frames and hopper are cast-iron, and the stones French Burr, 30 inches in diameter; grinds of wheat and corn 20 bushels an hour, weighs fourteen hundred pounds. These mills, constructed upon a new principle, have become widely known, and are producing a revolution in milling. Cash orders promptly supplied, and the mills warranted to work in the best manner. The patentee offers $500 reward for any mill which will do an equal amount of work with the same power and dressing. Made and for sale at the corner of Court and Union streets, New Haven, Conn, by
20 12* EDWARD HARRISON.

LATHES FOR BROOM HANDLES, Etc.—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.
This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post paid) MUNN & CO.
At this Office.

8 HORSE STEAM ENGINE FOR SALE—We offer for sale an Engine and Boiler, as follows 8 horse, horizontal, cylinder 7 inches bore, 16 inch stroke, on a cast-iron bed, fly wheel, driving pulley, governor, pump, pipes, etc.; has never been used. The Boiler has been used by the maker about one year. It is cylinder, horizontal, 16 feet long, 30 inch diameter, has a steam chamber, try-cocks, check and safety valves: price, $600. Address
MUNN & CO.

FAMILY SCHOOL FOR BOYS—Easton, Conn. Number Limited to Twelve. Summer Session begins May 2nd. Rev. C. T. Prentice, Principal, References for circulars, etc.—S. H. Wales, Esq., Scientific American Office; Rev. S. J. Prime, 142 Nassau st; F. C. Woodworth, Esq., 118 Nassau st., and Capt. J. Brooks, Peck Slip, New York; George Sterling, and J. D. Johnson, Esqs., and Rev. Mr. Hewit, of Bridgeport, Conn.; Rev. Messrs. Atwater, of Fairfield, and Hall, of Norwalk, Conn. 29

BEARDSLEE'S PATENT PLANING Tonguing and Grooving Machines—These celebrated machines have now been generally introduced in various portions of the United States. More than thirty are now in successful practical operation in the State of New York alone. As an illustration of the extent of work which they are capable of performing, with unrivalled perfection, it is sufficient to state that, within the last six months and a half, over five millions of feet of spruce flooring have been planed, tongued and grooved by one of these machines at Plattsburgh, N. Y., never running to exceed ten hours a day. The claim that the Beardslee machine was an infringement upon the Woodworth patent, has been finally abandoned; and after the proofs had been taken, the suit instituted by the owners of that patent was discontinued, and the whole controversy terminated on the first of November last. Applications for machines or rights may be made to the subscriber, GEO. W. BEARDSLEE, 57 State street, or No. 764 Broadway, Albany.
15tf

T. J. SLOAN'S PATENT HYDROSTAT—For the Prevention of Steam Boiler Explosions. The undersigned having made extensive arrangements for the manufacture of these machines, are now prepared to receive orders for the immediate application of the same to boilers of every description. They have endeavored to place the instrument within the reach of all, by selling it at a very low price. the cost of one horse-power being only $20, five horse-power, $30, and so on, according to the capacity of the boiler. SLOAN & LEGGETT, Proprietors and Manufacturers, foot of East 25th st, New York. 30tf

W. P. N. FITZGERALD, Counsellor at Law has recently resigned the office of principal Examiner of Patents, which he has held for many years, and is ready to assist, professionally, in the preparation and trial of patent causes before the U. S. Courts in any of the States, and before the Supreme Court of the United States. He also acts as Counsel in cases before the Patent Office, and on appeals therefrom, but does not prepare applications for Patents Office corner of E and 8th sts., Washington, D. C. 18tf

MACHINERY.—S. C. HILLS, No. 12 Platt-st. N. Y. dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills; Kase's, Von Schmidt's and other Pumps; Johnson's Shingle Machines; Woodworth's, Daniel's and Law's Planing machines; Dick's Presses, Punches and Shears; Morticing and Tennoning machines; Belting; machinery oil, Beal's patent Cob and Corn mills; Burr mill and Grindstones; Lead and Iron Pipe &c. Letters to be noticed must be post-paid. 27tf

A. B. ELY, Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109 Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting.
27tf P. A. LEONARD

PAINTS, &c., Grinding Colors, Lamp Black, Asphaltic Drier Zinc Drier, and Stove Polish.
QUARTERMAN & SON, 114 John st.,
27tf Painters and Chemists.

BLACK LEAD CRUCIBLES and Melting Pots of any form, size and quality, made to suit customers, for 3 cents per number, and warranted equal to any of the kind manufactured in the world. by D. H. PURINTON, Somerset, Mass. 23 10*

PATENT DRAFT BOARDS—With extension scales, sheet fasteners, and T rule. See Reports of Worcester Fair, Maryland State Fair, &c. &c, with their awards. $10 complete. Sent by express. Address, post-paid, CHAMBERLIN & CO., Pittsfield, Mass. 16tf

THE TROY IRON BRIDGE CO. are prepared to erect Iron Bridges or Roofs, or any kind of bearing trusses, girders, or beams, to span one thousand feet or under, of any required strength, in any part of the country. Their bridges will be subjected to severe tests, and can be built for about the price of good wooden ones. Address BLANCHARD & FELLOWS, Troy, N. Y. 30 10*

NORCROSS ROTARY PLANING MACHINE,—Decided by the Circuit Court not to infringe the Woodworth Machine—I now offer my Planing Machines at a low price; they are not surpassed by any machines as to amount or quality of work. Tongueing and grooving machines also for sale, doing one or both edges as desired; 80 machines now in operation. Address me at Lowell, Mass.,
27 10* N. G. NORCROSS.

FALES & GRAY (Successors to TRACY & FALES), RAILROAD CAR MANUFACTURERS—Grove Works, Hartford, Connecticut. Passenger, freight, and all other descriptions of railroad cars and locomotive tenders made to order promptly.
1tf

C. B. HUTCHINSON'S PATENT STAVE Cutting Machines, the best in use, and applicable alike to thick or thin staves; also his Head Cutting and Turning, and Stave Jointing Machines.
For machines or territorial rights, apply to C B. HUTCHINSON & CO., Syracuse, N. Y. 9tf

J. D. WHITE'S PATENT CAR AXLE LATHES—also Patent Engine Screw Lathes, for boring and turning taper cutting screws, &c. We manufacture and keep constantly on hand the above lathes; also double slide Chuck and common Hand Lathes, Iron Planers, S. Ingersol's Patent Universal Ratchet Drill, &c. Weight of Axle Lathe, 5,500 lbs; price $600; Engine Screw Lathe, 1400 to 7,000 lbs; price $225 to $675, BROWN & WHITE,
27tf Windsor Locks, Conn.

COCHRAN'S CRUSHING MACHINE—Can be seen in daily operation in Thirteenth street, between 9th and 10th avenues. Parties in want of a machine for crushing and pulverizing quickly and cheaply Quartz Rock, Iron, Lead, Copper, and Silver Ores, and other mineral substances equally hard, are invited to witness the operation of these powerful and simple, but yet effective machines. For further particulars apply to E. & J. BUSSING & CO., No. 32 Cliff st., Y. N. 23tf

PATENT LAWS OF THE UNITED STATES, and information to inventors and patentees; for sale at the Scientific American office. Price 12 1-2 cents.

© 1853 SCIENTIFIC AMERICAN, INC

SCIENTIFIC MUSEUM.

Dust and Consumption.

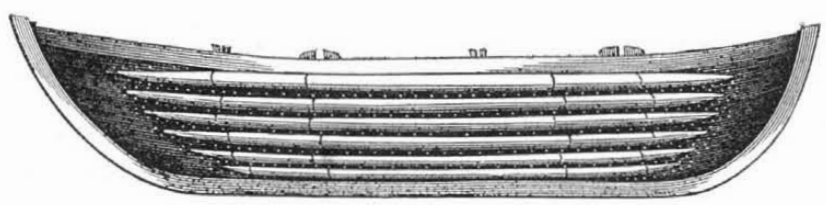
The number of deaths every week in New York City by consumption, is greater than by any other disease. People are exceedingly frightened about small-pox and fever, but neither of these diseases is so destructive of life as consumption, especially in our cities. What is the reason that this disease is so prevalent? Is it caused by evil habits, or climate? Many reasons might be adduced to show that this disease, in many of our cities, is produced by a variety of causes, some of which, if removed, would render it less prevalent. A changeable wet climate is the one where this disease prevails, but if to sudden heats, excessive colds, and much rain, there are impurities in the atmosphere such as smoke, dust, &c., or a want of good ventilation, then other fruitful sources of ill health are added to the climate, as the causes which produce this disease. In New York city the excessive amount of dust which is found everywhere, in dry breezy weather, is perhaps one of the prolific causes of this disease. In a dry climate and a clear atmosphere, it is unknown, but alas for those who are predisposed to it, no such a climate nor atmosphere are to be found here, and from the gross negligence and miserable mismanagement of the government of New York City, the principal streets are the dirtiest in Christendom, hence when no shower visits them for two or three days, clouds of dust roll along with every passing breeze, and every person who from business is compelled to tread our thoroughfares, soon becomes as dark in the face as an Arab. During the past week every pedestrian found in our streets resembled a professor of chimney sweeping, and all owing to our dirty streets. It is a hard lot to snuff and inhale the very dust on which we tread, but in New York we must do it not unfrequently. Physicians have observed that the prevalence of consumption in many cities is caused by inhaling dust into the [illegible]. All persons who have weak lungs should avoid cities, especially dusty ones. It is a shame for a city like New York to be afflicted by its own internal mismanagement with the evils of the Sahara Desert. With such an abundance of water as it has, its streets can be kept clean at all times. It is one of the most insane, shameful, and disgraceful facts connected with New York city, that its streets are kept in such a filthy condition. Strangers from all parts of the world notice this, and pay us compliments for it, but of such a kind as to make us hang our heads. Our people laugh and look to the city government for the remedy; they think that when they elect a man to fill the Office of Street Commissioner, they have done their duty, and all blame is rolled off their consciences. This is a sad evidence of incorrect views of duty; the people and the people alone are to blame for every evil that exists in our city. They elect or appoint men to do certain duties, they are their servants, and for the acts of their servants they are responsible, and for their evil consequences, they themselves are to blame. The cause of so much mismanagement and evil conduct in public officers, is a want of correct and conscientious views of duty among our citizens, especially the intelligent portion of them.

Monument to De Witt Clinton,

Mr. Henry K. Browne, of Brooklyn, has executed, in bronze, a colossal statue of Clinton. The costume is that of a gentleman fifty years ago. The pedestal, which is about as high as the statue itself, is also of bronze. Its cornices are adorned with vines and oak leaves. The two principal sides are covered with bas-reliefs. One of them represents a canal at its commencement; laborers are busy with pickaxes and spades; horses with carts and men with barrows convey away the earth; engineers are taking estimates of the work. On the other side we find the canal in full operation. It is proposed to make application to the Legislature to authorize its erection in the Capitol Park at Albany. The cost is estimated at about $20-000.

Iron Tubular Safety Boat.

We give this week an engraving of a new description of Life Boat, the invention of a Mr. Taylor, of England, and which is taken from the "London Expositor." It is called a tubular safety boat, and consists of a number of iron tubes placed in regular order, as shown in the engraving. Mr. Taylor says that he is more an imitator of nature than an inventor, and that his idea regarding tubular power was borrowed from the strength of a quill, the strongest combination of matter for its weight in nature. Another idea connected with his invention was copied from the construction of the Nautilus, which virtually uses tubes to rise or sink in the water, as may be



be replaced with salt water, so as to preserve the weight carried by the vessel. The second consists of the facility afforded for extinguishing fires at sea—especially such fires as originate spontaneously in cargoes—for internal cocks or plugs could be affixed to the tubes, in order to secure both these objects. The invention is also applicable to the construction of mail boxes and other articles of nautical furniture, in order that if thrown overboard they may float securely and their contents be preserved. The only question of doubt as to the advantages of this mode of construction, is respecting its efficiency for sailing; for a safety boat it appears to be well suited, combining strength with buoyancy, but in its applicability of form to sailing vessels, we have not so much faith. It would however be a great advantage, particularly for emigrant ships, if no material objections could be urged against it, nor are there any that we know of except the very important one with regard to the sailing qualities, which, we conjecture, would be found inferior to those of our present build of ships, constructed as they are upon certain principles.

How to take Care of a Watch.

A watch must be carefully attended to. It should be wound up every morning or evening (perhaps evening is the best time) about the same hour. The key should be in good condition, and fit well to the arbor. If it is too large and has a steel point, it will soon wear off the corners of the arbor, and then it cannot be wound up at all. It should also be [illegible] with care, not too fast nor slow, there are more mainsprings and chains broken through a jerk in winding, than from any other cause. As all metals contract and expand by heat, it must be manifest that to keep the watch as nearly as possible at one temperature, is a necessary piece of attention. Keep the watch as constantly as possible in one position—that is, if it hangs by day, let it hang by night against something soft. The hands of a chronometer or duplex watch should never be set backwards—in other watches this is of no consequence. The glass should never be opened in watches that set and regulate at the back. On regulating a watch, should it be fast, move the regulator a trifle towards the slow, and if going slow, do the reverse. You cannot move the regulator too slightly or too gently at a time, and the only inconvenience is, that you may have to perform the duty more than once.

Never keep a poor watch; that is one with poorly finished works, which cannot under any circumstances keep good time. No person should keep a watch on which he cannot rely for accuracy; a good watch is a faithful mentor, a poor one is like a false companion. It makes no matter whether the case of a watch be gold or silver, if the works are well executed and arranged, it is a good watch. Appearances in watches are as deceitful as the dress of individuals; the character cannot be discovered by the outward appearance.—One word more. Let none of our young or old friends who may come from the country this summer to visit New York City and the Crystal Palace, buy a watch at any auction he may see going on in any street, however respectable in appearance the shop may be; if he does, he will have to pay for a gilt instead of a gold one; in such cases the price paid is always too dear for the lesson taught.

Price of Wool.

The "Buffalo Commercial" is informed that about two-thirds of the wool-clip of Knox Co, Ohio, has been sold on the sheep's backs, at prices ranging from 42 to 62 cents, averaging about 50 cents. One party bought 180,000 lbs. at an early period, at an average of 44 or 45 cents. Afterwards some 70,000 or 80,000 lbs. were bought at higher rates, say 55 to 63. The entire crop, it is supposed, will average about 40 cents, which is thought to be above its value, notwithstanding the improvement in quality.

Railway Curves.

The "Charleston Mercury" has some excellent remarks about railway curves, and points out the danger and absurdity of constructing so many curves upon some railroads. It says:—

"In the low and middle country of the South these mischievous meanderings of railroads are quite inexcusable. They are never necessary, and in their effects, they form one of the most fruitful sources of expense in the working of the roads. They lengthen the running distance, and thus cause a loss of time to every train. They increase this loss by checking speed. The curved track wears out much faster, and it tears and wrenches the rolling stock. Add to this that every abrupt curve, by concealing the track, becomes a trap for the trains, and will, in all probability, in the ordinary period of a charter, cost the company three times as much in repairs and accidents, as was saved in the first construction.

We have felt that, at this time, when so many railroads are in progress in our own and the neighboring States, this point could not be too strongly pressed on the attention of their managers. Railroads are not temporary expedients—they are meant for the use of all future generations, and are expected to be the most enduring, as well as the grandest monuments of the enterprize and forecast of our age. Let them be built in a manner worthy of their destined office, as the great arterial system of the industrial world,—the bond of union, and the beneficent minister to the wants of the races of men."

These remarks we hope will not be lost upon our Southern and Western railroad companies. We have a country in which straight and level railroads can be built at less expense than they can in any other country on the face of this globe. Air lines, level and double track railroads, and no others should be built.

Chloride of Gold and Common Salt.

This is the article generally sold by dealers for chloride of gold. It is made by adding to the solution of gold in nitro-muriatic acid, a solution of as much, by weight, of common salt as there is of gold, and evaporating. It crystalizes in a bright yellow powder, and is supposed by inexperienced daguerreotypists to be of a purer quality, because it has the color of the metal.

To Prevent Incrustations in Boilers.

Protochloride of tin has been lately proposed for this purpose from the property that it possesses of dissolving the earthy salts that are produced from the evaporation of the water employed in steam boilers. The protochloride of tin when subjected to the influence of water is changed into a soluble acid salt which dissolves the earthy salts. By the addition of about 2 lbs. of protochloride to a cubic yard of water evaporated, the formation of deposits and incrustations in tubular and common boilers is prevented.

Herr Von Parmewitz, the inventor of the process for making wool from pine trees, has recently presented to the King of Prussia specimens of paper made of the same material. Another ingenious individual, at Giersdorf, has also made paper from the red pine, which is so white and good as to be fit for writing or drawing, and needs no sizing because of its resinous quality.

LITERARY NOTICES.

EXAMINATIONS OF DRUGS AND MEDICINES—This is a very excellent and useful volume, by C. H. Pierce, M. D., of Boston, and just published by H. C. Baird, Philadelphia, some of the articlos are furnished by Dr. C. Linck, formerly of the Giessen Laboratory under Liebig, and once Assistant to Prof. Horsford, at Cambridge. It is well known that stringent laws exist against the introduction of foreign drugs, and that there is but little danger (it was once great) of the introduction of adulterated foreign drugs; but just in proportion as the quality of imported foreign drugs have improved the home adulterated drugs have increased, and against these there is no law; it belongs to the several States to make such laws as will prevent the notorious evil of home drug adulteration. This book is exceedingly valuable and necessary at the present time, as it points out the properties of different chemicals, and the means to be employed for testing their qualities.

LITTELL'S LIVING AGE: NEW SERIES—This excellent weekly publication, containing the choicest articles of foreign and home literature, selected from the best magazines and reviews, has commenced a new series, with a great improvement in the quantity of its matter; it is of magazine form, neat for binding, and contains 64 pages of closely printed matter, and this number contains 13 articles of unquestioned merit. We are glad to know that "The Living Age" is increasing in circulation; we hope it will have a large addition of new subscribers; it is worthy of it. All those who have a taste for real literature can appreciate its worth. It is published by Littell & Son, Boston: each number 12cts.

THE ILLUSTRATED MAGAZINE OF ART—A Montgomery, publisher, New York: We cannot withhold the expression of the very high opinion we have formed of this elegant publication, the first four numbers of which have accidentally come under our notice. The literary character of the work is of the very highest order, especially the historical papers which have been thus far of peculiar and marked interest, added to this, and to make it far more interesting, the work is richly embellished with illustrations, done on wood in a style of artistic elegance, never surpassed. We sincerely hope it may meet with success commensurate with its intrinsic worth, as it is a work capable of imparting both pleasure and profit to all.

MECHANICS

Manufacturers and Inventors.

A new Volume of the SCIENTIFIC AMERICAN commences about the middle of September in each year. It is a journal of Scientific, Mechanical, and other improvements; the advocate of industry in all its various branches. It is published weekly in a form suitable for binding, and constitutes, at the end of each year, a splendid volume of over 400 pages, with a copious index, and from five to six hundred original engravings, together with a great amount of practical information concerning the progress of invention and discovery throughout the world.

The Scientific American is the most widely circulated and popular journal of the kind now published. Its Editors, Contributors, and Correspondents are among the ablest practical scientific men in the world.

The Patent Claims are published weekly and are invaluable to Inventors and Patentees.

We particularly warn the public against paying money to Travelling Agents, as we are not in the habit of furnishing certificates of agency to any one.

Letters should be directed (post-paid) to
MUNN & CO.,
128 Fulton street, New York.

Terms! Terms! Terms!

One copy, for One Year	$2
" Six Months	$1
Five copies, for Six Months	$4
Ten Copies for Six Months for	$8
Ten Copies for Twelve Months,	$15
Fifteen Copies for Twelve Months,	$22
Twenty Copies for Twelve Months,	$28

Southern and Western Money taken at par for subscriptions, or Post Office Stamps taken at their full value.

© 1853 SCIENTIFIC AMERICAN, INC